

AFOSR-TR-89-1514

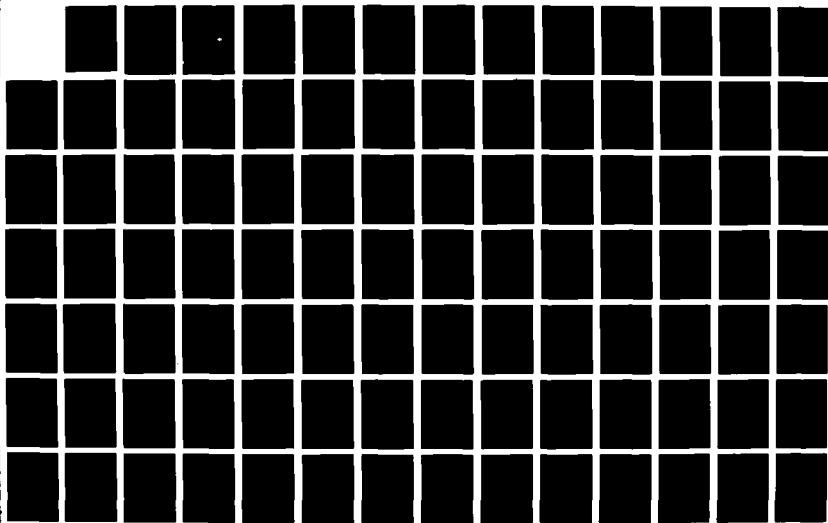
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH  
TECHNICAL REPORT SUMMARY (U) AIR FORCE OFFICE OF  
SCIENTIFIC RESEARCH DOLLING AFB DC 8 MERT SEP 83

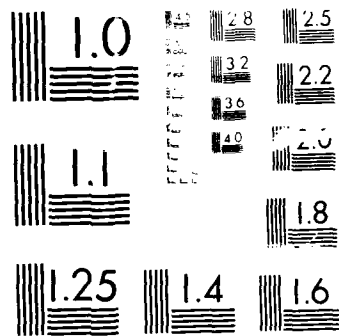
UNCLASSIFIED

AFOSR-TR-89-1514

F/O 5/2

ML





PHOTOGRAPH THIS SHEET

AD-A214 912

DTIC ACCESSION NUMBER

LEVEL

INVENTORY

AFOSR-TR-89-1514

DOCUMENT IDENTIFICATION

SEPT 83

DISTRIBUTION STATEMENT A

Approved for public release;  
Distribution Unlimited

DISTRIBUTION STATEMENT

ACCESSION FOR

NTIS GRA&I

DTIC TAB

UNANNOUNCED

JUSTIFICATION



BY

DISTRIBUTION /

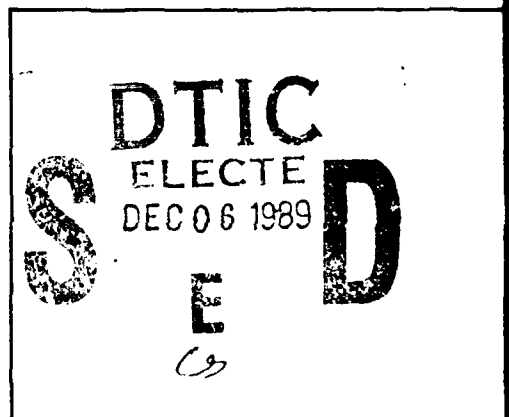
AVAILABILITY CODES

DIST

AVAIL AND/OR SPECIAL

A-1

DISTRIBUTION STAMP



DATE ACCESSIONED

DATE RETURNED

REGISTERED OR CERTIFIED NO.

DATE RECEIVED IN DTIC

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-FDAC





**AFOSR**

**TECHNICAL REPORT SUMMARIES**

**THIRD QUARTER (CY)**

**JULY — SEPTEMBER 1983**

*PREPARED BY:*

*BARBARA WERT, CHIEF*

*TECHNICAL DOCUMENTS SECTION*

*AFOSR/XOTD*

*BOLLING AFB, DC 20332*

*(202) 767-4912 or AUTOVON 297-4912*

## REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S) <b>AFOSR-1K-89-1514</b>		
6a. NAME OF PERFORMING ORGANIZATION AFOSR	6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION AFOSR/XOTD			
6c. ADDRESS (City, State, and ZIP Code) BUILDING 410 BOLLING AFB DC 20332-6448		7b. ADDRESS (City, State, and ZIP Code) BUILDING 410 BOLLING AFB DC 20332-6448			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION AFOSR	8b. OFFICE SYMBOL (If applicable) XOTD	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER IN-HOUSE			
8c. ADDRESS (City, State, and ZIP Code) BUILDING 410 BOLLING AFB DC 20332-6448		10. SOURCE OF FUNDING NUMBERS			
		PROGRAM ELEMENT NO. N/A	PROJECT NO. N/A	TASK NO. N/A	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) AFOSR TECHNICAL REPORT SUMMARIES					
12. PERSONAL AUTHOR(S) <i>Barbara Wert</i>					
13a. TYPE OF REPORT QUARTERLY	13b. TIME COVERED FROM <i>JUL</i> TO <i>SEP 83</i>		14. DATE OF REPORT (Year Month, Day)		15. PAGE COUNT
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)  The AFOSR Technical Report Summaries are published quarterly of each calendar year. They consist of a brief summary of each AFOSR technical report received in the Technical Information Division and submitted to the Defense Technical Information Center for that quarter.					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL DEBRA L. TYRRELL			22b. TELEPHONE (Include Area Code) (202) 767-4912		22c. OFFICE SYMBOL XOTD

## INTRODUCTION

The Air Force Office of Scientific Research Technical Report Summaries are published quarterly as of March, June, September, and December of each calendar year. They consist of a brief summary of each AFOSR technical report received in the Technical Information Division and submitted to the Defense Technical Information Center (DTIC) for that quarter. The summaries contain two indexes for easily locating the technical reports that may be of interest to the user. These are followed by abstracts of the reports.

### 1) SUBJECT INDEX

- a. Subject Field
- b. Title of Report
- c. AD Number (Accession Number)

### 2) PERSONAL AUTHOR INDEX

- a. Primary Author
- b. Title of Report
- c. AD Number

AFOSR does not maintain copies of technical reports for distribution. However, you may obtain any of these reports if you are a registered government agency or government contractor with DTIC, by requesting the AD number of that report from the DTIC, Cameron Station, Alexandria, Virginia, 22314.

## PURPOSE

The purpose of this report is to inform Air Force Laboratories about the science that the Air Force Office of Scientific Research is supporting.

### AFOSR MISSION

The Air Force Office of Scientific Research (AFOSR) is the Single Manager of the Air Force Defense Research Sciences Program (Program Element 61102F) and the primary Air Force agency for the extramural support of fundamental scientific research. The AFOSR is organizationally under the DCS/Science and Technology, Air Force Systems Command.

AFOSR awards grants and contracts for research in areas of science relevant to the needs of the Air Force. Research is selected for support from unsolicited proposals originating from scientists investigating problems involving the search for new knowledge and the expansion of scientific principles. Selection is on the basis of scientific potential for improving Air Force operational capabilities, originality, significance to science, the qualification of the principal investigators, and the reasonableness of the proposed budget.

### KEY TO READING THE DATA

The summaries consist of two indexes and the abstracts. From one of the two indexes, locate the AD number of the report that is of interest to you. Use this number to locate the abstract of the report in the abstracts section. The first report submitted to DTIC during the quarter (the one with the lowest AD number) appears on the last page of the abstracts section. The last report submitted to DTIC during the quarter (the one with the highest DTIC number) appears on the first page of the abstracts section. The following terms will give you a brief description of the elements used in each summary of this report.

DTIC Report Bibliography - DTIC's brief description of a technical report.

Search Control Number - A number assigned by DTIC at the time a bibliography is printed.

AD Number - A number assigned to each technical report when received by the DTIC.

Field & Group Numbers - (appearing after the AD number) First number is the subject field and the second number after the slash is the particular group under that subject field.

Corporate Author/Performing Organization - The organization; e.g., college/university, company, etc., at which the research is conducted.

Title - The title of the technical report.

Descriptive Note - Gives the type of report; e.g., final, interim, etc., and the period of the time of the research.

Date - Date of the technical report.

Pages - Total number of pages contained in the technical report.

Personal Author - Person or persons who wrote the report.

Contract/Grant Number - The instrument control number identifying the contracting activity and funding year under which the research is initiated.

Project Number - A number unique to a particular area of science; e.g., 2304 is the project number for mathematics.

**Task Number** - An alphanumeric number unique to a specific field of the main area of science; e.g., 2304 is the project number for mathematics and A3 is the task number for computational sciences.

**Monitor Number** - The number assigned to a particular report by the government agency monitoring the research. The number consists of the government monitor acronym, the present calendar year and the technical report assigned consecutively; e.g., AFOSR-IR-83-0001 is the first number used for the first technical report processed for Calendar Year 1983.

**Supplementary Note** - A variety of statements pertaining to a report. For example, if the report is a journal article, the supplementary note might give you the journal citation, which will include the name of the journal the article it appears in, and the volume number, date, and the page numbers of the journal.

**Abstract** - A brief summary describing the research of the report.

**Descriptors** - Key words describing the research.

**Identifiers** - Commonly used designators, such as names of equipment, names of projects or acronyms, the AFOSR project and task number, and the Air Force Research Program Element number.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH SCIENTIFIC STAFF DIRECTORY  
BOLLING AIR FORCE BASE, DC 20332

OFFICE OF THE COMMANDER/DIRECTOR

Commander Col James E. Baker 5017  
Vice Commander Col Richard H. Hartke 5018

NA - DIRECTORATE OF AEROSPACE SCIENCES

Director Dr Michael Salkind  
Prog Mgr Lt Col Lawrence Hokanson  
Prog Mgr Dr Leonard H. Caveny  
Prog Mgr Capt Michael S. Francis  
Prog Mgr Dr James Wilson  
Prog Mgr Maj David A. Glasgow  
Prog Mgr Dr Anthony Amos  
Prog Mgr Dr Julian Tishkoff  
Visiting Professor Gordon C. Oates  
Visiting Professor Gerard Faeth  
AF/LEE R&D Liaison Lester Henriksen

EXT  
4987  
4935  
4937  
4935  
4935  
4937  
4937  
4937  
4937  
5010

NL - DIRECTORATE OF LIFE SCIENCES

Director Dr Robert K. Dismukes  
Prog Mgr Lt Col Christopher Lind  
Prog Mgr Dr William Berry  
Prog Mgr Dr Alfred Fregly  
Prog Mgr Dr Genevieve Haddad  
Visiting Professor Dr John Langney

EXT  
4278  
5021  
5021  
5024  
5021  
5022

NM - DIRECTORATE OF MATHEMATICAL & INFORMATION SCIENCES

Director Dr David W. Fox  
Prog Mgr Dr Joseph Bram  
Prog Mgr Dr Robert Buchal  
Prog Mgr Capt John P. Thomas, Jr.  
Visiting Professor John Burns

5025  
4939  
4939  
5026  
5028

NC - DIRECTORATE OF CHEMICAL & ATMOSPHERIC SCIENCES

Director Dr Donald Ball  
Asst Dir Denton W. Elliott  
Prog Mgr Lt Col Ted Cress  
Prog Mgr Dr Anthony Matuszko  
Prog Mgr Capt Lee E. Myers  
Prog Mgr Dr Donald Ulrich  
Visiting Professor Barry Feldman

4960  
4960  
4963  
4963  
4963  
4963  
4963

NP - DIRECTORATE OF PHYSICAL & GEOPHYSICAL SCIENCES

Director Col Hugo Weichel  
Staff Scientist Mr. William Best  
Prog Mgr Dr Ralph E. Kelley  
Prog Mgr Capt Henry L. Pugh  
Prog Mgr Dr Henry R. Radoski  
Prog Mgr Dr Howard R. Schlossberg

4904  
4908  
4908  
4907  
4906  
4907

NE - DIRECTORATE OF ELECTRONIC & MATERIAL SCIENCES

Acting Director Lt Col Harry V. Winsor  
Prog Mgr Lt Col Robert W. Carter, Jr.  
Prog Mgr Dr Alan Rosenstein  
Prog Mgr Mr. Max Swerdlow  
Prog Mgr Dr Gerald Witt

4933  
4933  
4931  
4933  
4931

TELEPHONE  
Commercial (202) 767-XXXX  
AUTODIAL 297-XXXX

## SUBJECT INDEX





# UNCLASSIFIED

Summer Support Program (1982).  
Management and Technical Report.\*  
AD-A130 767

\*AIRCRAFT ENGINES  
Unsteady Swirling Flows in Gas  
Turbines.\*  
AD-A128 386

\*ALDOSTERONE  
Reprint: Age Dependent Selective  
Effects of Hydrocortisone and  
Aldosterone on the Polyadenosine  
Diphosphoribose Metabolism of  
Isolated Cardiac Nuclei.  
AD-A129 686

\*ALGORITHMS  
Report on Sponsored Research on  
Algorithmic Methods in  
Probability.\*

AD-A128 536  
Reprint: Prime Program  
Decomposition  
AD-A129 132  
Reprint: Some Generalizations of  
Median Filters.  
AD-A129 202

Asymptotic Behavior of  
Stochastic Approximation and Large  
Deviations.\*  
AD-A129 209  
Weak Convergence and Asymptotic  
Properties of Adaptive Filters with  
Constant Gains.\*

AD-A129 214  
Limited Sensing Random Multiple  
Access Using Binary Feedback.\*

AD-A129 251  
Interim Report for CY 1982.\*  
AD-A129 261  
Synthesis of Optimal Digital  
Controller for Continuous-Data  
Model-Following.\*

AD-A129 288  
Efficient Computation for Large  
Scale Optimization.\*  
AD-A129 293

A Structurally Stable  
Modification of Helman Rarick's  
P4 Algorithm for Reordering

Unsymmetric Sparse Matrices.\*  
AD-A129 344

Reprint: Optimum Quantization of  
Fir Wiener and Matched Filters.

AD-A129 599  
A Study of Texture Analysis  
Algorithms.\*  
AD-A130 034

Three-Dimensional Feature  
Extraction.\*

AD-A131 333  
A Study of Texture Analysis  
Algorithms.\*  
AD-A131 498

\*ALIGNMENT  
Nuclear Moment Alignment.  
Relaxation and Detection  
Mechanisms.\*  
AD-A131 546

\*ALKALI METALS  
Reprint: Resistivity Anomalies  
and Phase Transitions in Alkali-  
Metal Graphite Intercalation  
Compounds.  
AD-A130 055

\*ALTITUDE  
Reprint: Comparison of  
Tropopause Height and Frontal  
Boundary Locations Based on Radar  
and Radiosonde Data.  
AD-A128 467

\*ALUMINUM  
Reprint: Adsorbate Structure  
Modeling Based on Electron Energy  
Loss Spectroscopy and Lattice  
Dynamical Calculations. Application  
to O/A1(111).  
AD-A128 464

High Resolution Electron Energy  
Loss Studies of Chemisorbed Species  
on Aluminum and Titanium.\*  
AD-A129 204

\*ALUMINUM ALLOYS  
Mechanisms of Corrosion Fatigue  
in High Strength I/M (Ingot  
Metallurgy) and P/M (Powder  
Metallurgy)

Metallurgy) Aluminum Alloys.\*  
AD-A130 041

Fatigue Behavior of Long and  
Short Cracks in Wrought and Powder  
Aluminum Alloys.\*  
AD-A131 324

\*AMIDES  
An Approach to Molecular  
Composites.\*  
AD-A130 192

\*AMMUNITION  
Reprint: Response of Cracks in  
Structural Materials to Short Pulse  
Loads.  
AD-A131 565

\*ANAEROBIC BACTERIA  
The Mechanism of Anaerobic  
(Microbial) Corrosion.\*  
AD-A131 223

\*ANAEROBIC PROCESSES  
The Mechanism of Anaerobic  
(Microbial) Corrosion.\*  
AD-A131 223

\*ANGLES  
Investigation of the Rayleigh  
Critical Angle Phenomenon for the  
Characterization of Surface  
Properties.\*  
AD-A131 530

\*ANIONS  
Theoretical Studies of Kinetic  
Mechanisms of Negative Ion  
Formation in Plasmas.\*  
AD-A129 832

\*ANISOTROPY  
Reprint: Inherent Anisotropy and  
Shear Strength of Assembly of Oval  
Cross-Sectional Rods.  
AD-A131 616

\*ANNEALING  
Study of Deep-Level Defects and  
Transport Properties vs Growth  
Parameters and Annealing Conditions

SUBJECT INDEX-2  
UNCLASSIFIED EVN35A

AIR-ANN

# UNCLASSIFIED

- in III-V Compound Semiconductors \*  
AD A130 776
- \*ANOMALIES  
Reprint: Resistivity Anomalies  
and Phase Transitions in Alkali-  
Metal Graphite Intercalation  
Compounds  
AD-A130 055
- \*APPLIED MATHEMATICS  
Rising Bubbles \*  
AD-A131 572
- \*APPROXIMATION/MATHEMATICS)  
Asymptotic Behavior of  
Stochastic Approximation and Large  
Deviations \*  
AD-A129 209
- Approximation Methods in  
Multidimensional Filter Design and  
Related Problems Encountered in  
Multidimensional System Design.\*  
AD-A131 316
- \*AQUATIC ORGANISMS  
Sublethal Effects of JP-4 on  
Lepomis macrochirus \*  
AD-A128 618
- \*ARTIFICIAL INTELLIGENCE  
The Intelligent Program Editor:  
A Knowledge Based System for  
Supporting Program and  
Documentation Maintenance.\*  
AD-A129 153  
Artificial Intelligence  
Implications for Information  
Retrieval.\*  
AD-A131 382  
Expert Systems: Matching  
Techniques to Tasks.\*  
AD-A131 385  
CSRL (Conceptual Structures  
Representation Language): A  
Language for Expert Systems  
Diagnosis.\*  
AD-A131 403
- \*ASYMPTOTIC NORMALITY  
Asymptotic Behavior of
- Stochastic Approximation and Large  
Deviations.\*  
AD A129 209
- \*ASYMPTOTIC SERIES  
Asymptotic Methods in  
Reliability Theory: A Review \*  
AD A130 163
- \*ATOMIC ENERGY LEVELS  
Relativistic Calculations and  
Measurements of Energies, Auger  
Rates, and Lifetimes.\*  
AD A130 094  
Reprint: Relativistic  
Calculation of Atomic M-Shell  
Ionization by Protons.  
AD-A130 664  
Reprint: Atomic Inner Shell  
Transitions-- Theory and the Need  
for Experiments.  
AD A130 748  
Reprint: Deexcitation of Light  
Li-Like Ions in the 1s2s2p State.  
AD-A131 556
- \*ATOMIC ORBITALS  
Reprint: Spherical Harmonic  
Expansion Techniques for  
Multicenter Integrals over  $5D$ 's  
(Slater-Type Orbitals). A re-  
Examination for Vector Processing  
Computers.  
AD-A128 429
- \*ATOMIC STRUCTURE  
Nuclear Magnetic Resonance  
Gyroscope.\*  
AD-A130 102
- \*ATOMIZATION  
Reprint: Breakup and Droplet  
Formation of Slurry Jets.  
AD-A130 699  
Transverse Jet Break-up and  
Atomization with Rapid Vaporization  
along the Trajectory.\*  
AD-A130 706  
Reprint: Atomization of  
Impinging Liquid Jets in a  
Supersonic Crossflow.
- AD A130 714
- \*AUGER ELECTRON SPECTROSCOPY  
Reprint: K-MM Auger-Intensity  
Peaks from Double Hole Energy Level  
Crossings.  
AD A130 053
- \*AURORAE  
Latitudinal Variations of  
Auroral-Zone Ionization  
Distribution.\*  
AD A128 612
- \*AUTOMATIC  
Approaches to Automatic Strategy  
Analysis and Synthesis.\*  
AD-A130 806
- \*AXIAL FLOW COMPRESSORS  
Aerodynamics of Advanced Axial-  
Flow Turbomachinery.\*  
AD A131 360
- \*AXIAL FLOW TURBINES  
Aerodynamics of Advanced Axial-  
Flow Turbomachinery.\*  
AD A131 360
- \*AZIMUTH  
Reprint: Azimuthal Dependence of  
Impact Scattering in Electron  
Energy Loss Spectroscopy.  
AD-A128 476
- \*AZOLES  
Theoretical Studies of  
Relatively Rigid Polymer Chains.\*  
AD-A128 421
- \*BACTERIA  
Development and Use of Inoculate  
Bacterial Cells to Assay the In  
vitro Activity of Pollutants.\*  
AD A128 378
- \*BANACH SPACE  
Reprint: Convergence of Weighted  
Sums of Arrays of Random Elements  
in Type p Spaces with Application  
to Density Estimation.

SUBJECT INDEX-3  
UNCLASSIFIED EVN35A

AND-BAN

# UNCLASSIFIED

AD-A128 452

## \*BANDWIDTH

Reprint: Versatile, High Resolution Continuum Source Atomic Absorption Flame Spectrometer with Resonance Flame Detector.  
AD-A128 538

## \*BARRIER COATINGS

Dip Process Thermal-Barrier Coatings for Superalloys.\*  
AD-A129 292

## \*BAYES THEOREM

Prediction of Future Observations in Polynomial Growth Curve Models. Part 1.\*  
AD-A129 359

## \*BEAMS (RADIATION)

Reprint: Focused Acoustic Beams for Accurate Phase Measurements.  
AD-A130 033

## \*BENZYL RADICALS

Reprint: Micellar Systems as 'Supercages' for Reactions of Geminate Radical Pairs. Magnetic Effects.  
AD-A130 157

## \*BIBLIOGRAPHIES

Report on Sponsored Research on Algorithmic Methods in Probability.\*  
AD-A128 536

## \*BIOASSAY

Development and Use of Anucleate Bacterial Cells to Assay the In vitro Activity of Pollutants.\*  
AD-A128 378

## \*BIOMECHANICS

Analysis of Long Bone and Vertebral Failure Patterns.\*  
AD-A129 233

## \*BLOOD CIRCULATION

Reprint: Automated Limb Blood

Flow Plethysmograph.  
AD-A129 232

## \*BONES

Analysis of Long Bone and Vertebral Failure Patterns.\*  
AD-A129 233

## \*BOUNDARY LAYER

Reprint: An Example of Boundary Layer in Delay Equations.  
AD-A129 144

## \*BOUNDARY VALUE PROBLEMS

Block Iterative Methods for Elliptic Finite Element Equations.\*  
AD-A129 150  
Reprint: The Unique Solvability of the Null Field Equations of Acoustics.  
AD-A129 263

## \*BRAIN

Reprint: Signal Processing in Evoked Potential Research: Applications of Filtering and Pattern Recognition.  
AD-A129 651

## \*BROMINE

Reprint: Collinear Quantum Mechanical Probabilities and Rate Constants for the Br HCl(v=2,3,4) Reaction Using Hyperspherical Coordinates.  
AD-A128 474

## \*BUBBLES

Rising Bubbles.\*  
AD-A131 572

## \*BURST TRANSMISSION

A Collision Resolution Protocol with Limited Channel Sensing - Finely Many Users.\*  
AD-A128 501

## \*BUTANES

Reprint: The Decomposition of 2,2,3,3-Tetramethylbutane in KCl- and B2O3-Coated Vessels in the

Presence of Oxygen.  
AD-A130 683

## \*CADMIUM

Properties of Mercury-Cadmium-Telluride Solid Solutions.\*  
AD-A130 224

## \*CALORIMETERS

Specific Heat of Octahydro - 1,3,5,7 - Tetranitro - 1,3,5,7 - Tetrazocine (HMX).\*  
AD-A128 442

## \*CARBENES

Reprint: Isomeric Sigma and Pi Radicals from Carboxylic Acids and Amides.  
AD-A128 453

## \*CARBIDES

The Specific Heat, 0.4K to 90K, of C8K, C8Cs, C8Rb and Their Pare HOPG (Highly Oriented Pyrolytic Graphite).  
AD-A131 361

## \*CARBON COMPOUNDS

Reprint: Heat Capacity and Magnetic Studies of Graphite Intercalated with FeCl3 and NiCl(2).  
AD-A131 390

## \*CARBOXYLIC ACIDS

Reprint: Isomeric Sigma and Pi Radicals from Carboxylic Acids and Amides.  
AD-A128 453

## \*CARDIOVASCULAR SYSTEM

Reprint: Cardiovascular Regulation in Canines during Low-Frequency Acceleration.  
AD-A129 537

## \*CATALYSTS

A Mechanistic Study of Nitromethane Decomposition on Ni Catalysts.\*  
AD-A128 444

SUBJECT INDEX-4  
UNCLASSIFIED EVN35A

B/N-CAT

# UNCLASSIFIED

Catalytic Combustion for  
Advanced Jet Engines.\*  
AD-B075 283L

\*CATHODES  
Experimental and Theoretical  
Investigation of Optogalvanic  
Effects.\*  
AD-A130 111

\*CERAMIC MATERIALS  
Strengthening and Strength  
Uniformity of Structural Ceramics.\*  
AD-A129 570  
Hot Isostatic Pressing of  
Ceramic Powder Compacts.\*  
AD-A131 514

\*CEREBRAL CORTEX  
Reciprocal Neural Pathways and  
Associative Networks.\*  
AD-A129 480

\*CHAIN REACTIONS  
Reprint: Surface Termination in  
Chain Reactions and the Interaction  
with Homogeneous Termination.  
AD-A130 715

\*CHAINS  
Theoretical Studies of  
Relatively Rigid Polymer Chains.\*  
AD-A128 421

\*CHEMICAL ANALYSIS  
Reprint: Spatial and Temporal  
Studies of a Glow Discharge.  
AD-A128 461

\*CHEMICAL DISSOCIATION  
Reprint: Infrared Multiphoton  
Decomposition and Energy-Dependent  
Absorption Cross Sections of  
Chloroethane-d(0), -2-d(1), and -  
2,2,2-d(3).  
AD-A131 604

\*CHEMICAL LASERS  
Study of the Chlorine-Basic  
Hydrogen Peroxide Reaction.\*  
AD-A128 372

Rotational Relaxation Studies of  
Hydrogen Fluoride.\*  
AD-A128 384

Molecular Interactions with Many-  
Body Methods.\*  
AD-A130 040

\*CHEMICAL PROPERTIES  
Reprint: Response to Comment on  
'Tunneling alpha squared F (omega)  
as a Function of Composition in A15  
NbGe', by B. R. Sood.  
AD-A131 534

\*CHEMICAL REACTIONS  
Study of the Chlorine-Basic  
Hydrogen Peroxide Reaction.\*  
AD-A128 372

Reprint: Reactions of  
Azidotrifluoromethane with Halogen-  
Containing Oxidizers.  
AD-A128 416  
Reprint: Chemical Reactions of  
Tetramethyldisilene.  
AD-A128 457

Chemically Reacting Turbulent  
Shear Layers.\*  
AD-A131 553  
Reprint: On the Reaction Mg N2O  
Yields MgO N2.  
AD-A131 605

\*CHEMILUMINESCENCE  
Infrared Chemiluminescence  
Studies of Ion-Molecule Reactions  
in a Flowing Afterglow.\*  
AD-A130 138

\*CHEMISORPTION  
Reprint: Adsorbate Structure  
Modeling Based on Electron Energy  
Loss Spectroscopy and Lattice  
Dynamical Calculations. Application  
to O/A1(111).  
AD-A128 464  
High Resolution Electron Energy  
Loss Studies of Chemisorbed Species  
on Aluminum and Titanium.\*  
AD-A129 204

\*CHLORINE

Study of the Chlorine-Basic  
Hydrogen Peroxide Reaction.\*  
AD-A128 372

\*CHLOROETHANES  
Reprint: Infrared Multiphoton  
Decomposition and Energy-Dependent  
Absorption Cross Sections of  
Chloroethane-d(0), -2-d(1), and -  
2,2,2-d(3).  
AD-A131 604

\*CHOLINES  
Acute Effects of  
Anticholinesterase Agents on  
Pupillary Function.\*  
AD-A128 434

\*CHOLINESTERASE INHIBITORS  
Acute Effects of  
Anticholinesterase Agents on  
Pupillary Function.\*  
AD-A128 434

\*CHROMATIN  
Regulation of Chromatin Function  
by Polyadenosine  
Diphosphoribosylation.\*  
AD-A129 675

Reprint: ADP ribosylation of  
Nonhistone Chromatin Proteins in  
Vivo and of Actin in Vitro and  
Effects of Normal and Abnormal  
Growth Conditions and Organ-  
Specific Hormonal Influences.  
AD-A129 703

\*CHROMATOGRAPHIC ANALYSIS  
Reprint: Spectral Analysis of  
the Conformation of Polyadenosine  
Diphosphoribose: Evidence  
Indicating Secondary Structure.  
AD-A129 612

\*CLASSIFICATION  
Reprint: Synthesis and  
Characterization of Tungsten-  
Cobalt, -Rhodium, and -Platinum  
Compounds and the X-Ray Crystal  
Structures of Rh(mu-CC6H4Me-  
4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7)

SUBJECT INDEX-5  
UNCLASSIFIED EVN35A

CAT-CLA

# UNCLASSIFIED

and PtW mu-C(C6H4Me-4)(C(O)  
(col(pme3))(eta4-C8H12)(eta5-C5H5)).  
AD-A128 465

Reprint: Preprocessing for  
Improved Classification of Evoked  
Potentials.  
AD-A129 645

\*CLEAR AIR TURBULENCE  
Investigation of Shear-Induced  
Turbulence by MST (Mesosphere-  
Stratosphere-Troposphere Radar). \*  
AD-A129 203

\*CLINICAL MEDICINE  
Effects of Exhaustive Exercise  
on the Sleep of Men and Women.  
AD-A129 670

\*CLUSTERING  
Reprint: A Synthetic Route to  
Heteronuclear Clusters Containing  
Iridium and Rhodium: X-Ray Crystal  
Structures of (IrOs3(u-H)2(u-  
C1)(CO)12) and (Ir2Rh2(u-CO)(u3-  
CO)2(CO)4(n-C5Me5)2).  
AD-A128 520  
Reprint: Theoretical Aspects of  
Cluster Formation by kev  
bombardment of Rare-Gas Solids.  
AD-A131 283

\*COATINGS  
Transient Heat Transfer in  
Coated Superconductors. \*  
AD-A129 600  
Reprint: The Decomposition of  
2,2,3,3-Tetramethylbutane in KCl-  
and B2O3-Coated Vessels in the  
Presence of Oxygen.  
AD-A130 683  
Fundamental Research Directed to  
Advanced High Temperature Coating  
Systems Beyond the Current State-of-  
the-Art Systems. \*  
AD-A131 518

\*CODING  
Adaptive Hybrid Picture Coding. \*  
AD-A129 221

\*COHERENT ELECTROMAGNETIC RADIATION  
Coherent Propagation and Sum  
Frequency Generation into the  
Vacuum Ultraviolet. \*  
AD-A130 729

\*COHERENT SCATTERING  
Coherent Scattering of Light  
into High Frequency Radiowaves. \*  
AD-A130 691  
New Method in Elementary  
Particle Detection. \*  
AD-A131 238

\*COHESION  
Reprint: Influence of Fabric on  
Liquefaction and Densification  
Potential of Cohesionless Sand.  
AD-A130 949

\*COLLISIONS  
Reprint: Zeeman Transitions in  
Collisions of Na with Xe.  
AD-A129 220

\*COMBUSTION  
Linear Theory of Pressure  
Oscillations in Liquid Fueled  
Ramjet Engines. \*  
AD-A130 882  
Reprint: Linear Theory of  
Pressure Oscillations in Liquid-  
Fueled Ramjet Engines.  
AD-A131 610

\*COMBUSTORS  
Catalytic Combustion for  
Advanced Jet Engines. \*  
AD-B075 283L

\*COMMERCIAL EQUIPMENT  
Parts and Service Demand  
Distribution Generated by Primary  
Production. \*  
AD-A131 497

\*COMMUNICATION AND RADIO SYSTEMS  
Reprint: Robust Signal  
Processing for Communication  
Systems.  
AD-A129 761

\*COMMUNICATIONS CENTRALS  
Limited Sensing Random Multiple  
Access Using Binary Feedback. \*  
AD-A129 251

\*COMPARISON  
On Automatic Generation of  
Descriptive and Normative  
Theories. \*  
AD-A129 396

\*COMPENSATORS  
Reprint: Large-Signal Results  
for Degenerate Four-Wave Mixing and  
Phase Conjugate Resonators.  
AD-A131 311

\*COMPLEX NUMBERS  
Space-Variant Optical Systems. \*  
AD-A130 096

\*COMPOSITE MATERIALS  
Fracture Mechanics of Transverse  
Cracks and Edge Delamination in  
Graphite-Epoxy Composite  
Laminates. \*  
AD-A129 313  
Fracture Mechanics of Sub-  
Laminate Cracks. \*  
AD-A130 782

\*COMPRESSIBLE FLOW  
Stability of Compressible Wake  
and Jet Flows. \*  
AD-A128 414

\*COMPUTATIONS  
Reprint: Tritium Migration in  
Tritiated Anisole.  
AD-A128 454  
A Collision Resolution Protocol  
with Limited Channel Sensing -  
Finitely Many Users. \*  
AD-A128 501  
Optical Computing Research. \*  
AD-A129 166  
Reprint: Zeeman Transitions in  
Collisions of Na with Xe.  
AD-A129 220  
Reprint: Relativistic  
Calculation of Atomic M-Shell

SUBJECT INDEX-6  
UNCLASSIFIED EVN35A

CLE-COM

# UNCLASSIFIED

Ionization by Protons.

AD-A130 664

Scattering of Waves by Irregularities in Periodic Discrete Lattice Spaces. 2. Calculations.\*

AD-A130 665

\*COMPUTER AIDED INSTRUCTION

Advanced Training Techniques Using Computer Generated Imagery.\*

AD-A129 215

\*COMPUTER APPLICATIONS

Approaches to Automatic Strategy Analysis and Synthesis.\*

AD-A130 806

Reprint: On a Computer-Based Theory of Strategies.

AD-A131 351

Expert Systems: Matching Techniques to Tasks.\*

AD-A131 385

\*COMPUTER ARCHITECTURE

An Approach to Expert Systems for Mechanical Design.\*

AD-A131 340

\*COMPUTER GRAPHICS

A Study of Texture Analysis Algorithms.\*

AD-A130 034

\*COMPUTER PROGRAM VERIFICATION

Event Based Specification and Verification of Distributed Systems.\*

AD-A128 629

\*COMPUTER PROGRAMMING

Reprint: Proving Real-Time Properties of Programs with Temporal Logic.

AD-A129 013

The Intelligent Program Editor: A Knowledge Based System for Supporting Program and Documentation Maintenance.\*

AD-A129 153

Research on Synthesis of Concurrent Computing Systems.\*

AD-A130 048

\*COMPUTER PROGRAMS

Reprint: Prime Program Decomposition.

AD-A129 132

The Intelligent Program Editor:

A Knowledge Based System for Supporting Program and Documentation Maintenance.\*

AD-A129 153

On Automatic Generation of Descriptive and Normative Theories.\*

AD-A129 396

Research on Synthesis of Concurrent Computing Systems.\*

AD-A130 048

An Approach to Expert Systems for Mechanical Design.\*

AD-A131 340

Design of a System That Understands Informal Specifications.\*

AD-A131 479

Flexible Parsing.\*

AD-A131 495

\*COMPUTERIZED SIMULATION

On Automatic Generation of Descriptive and Normative Theories.\*

AD-A129 396

Transient Heat Transfer in Coated Superconductors.\*

AD-A129 600

Simulation of Ground Motions from the 1971 San Fernando Earthquake and an Aftershock of the 1975 Oroville Earthquake.\*

AD-A131 206

\*COMPUTERS

Reprint: Spherical-Harmonic Expansion Techniques for Multicenter Integrals over STO's (Slater-Type Orbitals). A Re-examination for Vector Processing Computers.

AD-A128 429

\*CONTINUOUS WAVE LASERS

Non-Linear Optical Interactions in Semiconductors.\*

AD-A129 995

\*CONTROL SYSTEMS

An Output Matching Approach to Multivariable Linear Digital Control.\*

AD-A128 662

Multivariable Linear Digital Control via State Space Output Matching.\*

AD-A129 262

Synthesis of Optimal Digital Controller for Continuous-Data Model-Following.\*

AD-A129 288

\*CONTROL THEORY

Optimal Control of Markov Processes.\*

AD-A129 296

A Collection of A-Optimal Designs for Control-Test Treatment Comparisons. I.\*

AD-A129 322

\*CORRECTIONS

Phase Conjugate Optical Resonator.\*

AD-A130 044

\*CORRELATION TECHNIQUES

Unified Theory of Plasma Correlations.\*

AD-A131 478

\*CORROSION

Mechanisms of Corrosion Fatigue in High Strength I/M (Ingot Metallurgy) and P/M (Powder Metallurgy) Aluminum Alloys.\*

AD-A130 041

The Mechanism of Anaerobic (Microbial) Corrosion.\*

AD-A131 223

\*COST EFFECTIVENESS

Reprint: Periodic Replacement with Increasing Minimal Repair

SUBJECT INDEX-7  
UNCLASSIFIED EVN35A

COM-COS

# UNCLASSIFIED

Costs at Failure.

AD-A130 081

## \*COUNTING METHODS

Computation of Counting Distributions Arising from a Single-Stage Multiplicative Process.\*

AD-A131 480

## \*COUPLING(INTERACTION)

Unified Theory of Plasma Correlations.\*

AD-A131 478

## \*CRACK PROPAGATION

Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates.\*

AD-A129 313

Fatigue Behavior of Long and Short Cracks in Wrought and Powder Aluminum Alloys.\*

AD-A131 324

Reprint: Response of Cracks in Structural Materials to Short Pulse Loads.

AD-A131 555

## \*CRACKS

Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates.\*

AD-A129 313

Fatigue Behavior of Long and Short Cracks in Wrought and Powder Aluminum Alloys.\*

AD-A131 324

Reprint: Response of Cracks in Structural Materials to Short Pulse Loads.

AD-A131 565

## \*CROSS SECTIONS

The Quantum Dynamics of Chemical Reactions.\*

AD-A130 160

## \*CRYSTAL GROWTH

Reprint: Electrical and Optical

Properties of InP Grown by Molecular Beam Epitaxy Using Cracked Phosphine.

AD-A131 264

## \*CRYSTAL STRUCTURE

Reprint: A Synthetic Route to Heteronuclear Clusters Containing Iridium and Rhodium: X-Ray Crystal Structures of  $(\text{IrOs}_3(\text{u-H})_2(\text{u-Cl})(\text{CO})_2)$  and  $(\text{Ir}_2\text{Rh}_2(\text{u-CO})(\text{u}_3\text{-CO})_2(\text{CO})_4(\text{n-C}_5\text{Me}_5)_2)$ .

AD-A128 520

## \*CURVES(GEOMETRY)

Prediction of Future Observations in Polynomial Growth Curve Models. Part 1.\*

AD-A129 359

## \*CYCLIC COMPOUNDS

Reprint: Isomers of  $(\text{PhMeSi})_6$  and  $(\text{PhMeSi})_{15}$ .

AD-A128 428

Reprint: Organosilicon Rotanes: Synthesis and an Unexpected Rearrangement.

AD-A128 466

## \*DATA BASES

Concurrent Updates and Retrieval in Distributed Database Systems.\*

AD-A129 529

Development of a Text-Editor Based Relational Data Base Management System.\*

AD-A131 481

## \*DATA PROCESSING

1982 Gordon Research Conference on Holography and Optical Information Processing.\*

AD-A129 137

Optical Computing Research.\*

AD-A129 166

## \*DATA TRANSMISSION SYSTEMS

A Collision Resolution Protocol with Limited Channel Sensing - Finely Many Users.\*

AD-A128 501

Limited Sensing Random Multiple Access Using Binary Feedback.\*

AD-A129 251

## \*DECAY

Reprint: Phase-Plane and Guggenheim Methods for Treatment of Kinetic Data.

AD-A129 207

Reprint: Induced Decay of Positronium and Grasers.

AD-A130 035

## \*DECISION MAKING

Approaches to Automatic Strategy Analysis and Synthesis.\*

AD-A130 806

## \*DECOMPOSITION

A Mechanistic Study of Nitromethane Decomposition on Ni Catalysts.\*

AD-A128 444

Reprint: The Decomposition of 2,2,3,3-Tetramethylbutane in KCl and B2O3-Coated Vessels in the Presence of Oxygen.

AD-A130 683

## \*DELTA MODULATION

Analysis of a Delayed Delta Modulator.\*

AD-A131 208

## \*DEOXYRIBONUCLEIC ACIDS

Reprint: Cell Specific Response of Cardiac Poly ADP-R and DNA Synthesis to Circulatory Stress.

AD-A129 575

Reprint: Age-Dependent Variation of Rates of Polyadenosine-Diphosphoribose Synthesis by Cardiac Nuclei and the Lack of Correlation of Enzymatic Activity with Macromolecular Size Distribution of DNA.

AD-A129 647

## \*DETECTION

Use of Holographic Linear Fringe Linearization Interferometry (FLI)

SUBJECT INDEX-8

UNCLASSIFIED EVN35A

COU-DET



# UNCLASSIFIED

for Detection of Defects.\*  
AD-A129 323  
New Method in Elementary  
Particle Detection.\*  
AD-A131 238  
Sensor Correlation and Data  
Fusion Theory.\*  
AD-A131 310

\*DIAGNOSIS/MEDICINE)  
CSRL (Conceptual Structures  
Representation Language): A  
Language for Expert Systems  
Diagnosis.\*  
AD-A131 403

\*DIATOMIC MOLECULES  
Radiation and Laser Potential of  
Homo and Heteronuclear Rare-Gas  
Diatomic Molecules.\*  
AD-A130 093

\*DIFFERENCE EQUATIONS  
Stability in Linear Delay  
Equations.\*  
AD-A129 264

\*DIFFERENTIAL EQUATIONS  
Reprint: The Three Dimensional  
Inverse Scattering Problem for  
Acoustic Waves.  
AD-A128 450  
Reprint: An Example of Boundary  
Layer in Delay Equations.  
AD-A129 144  
Stable Equilibria in a Scalar  
Parabolic Equation with Variable  
Diffusion.\*  
AD-A131 221

\*DIFFRACTION  
Reprint: Evaluation of  
Diffraction Stimulated Emission as a  
Potential Analytical Measurement  
Technique.  
AD-A131 590

\*DIFFUSERS  
Unsteady Transonic Flow in a Two-  
Dimensional Diffuser:  
Interpretation of Experimental

Results.\*  
AD-A129 406

\*DIFFUSION  
Stable Equilibria in a Scalar  
Parabolic Equation with Variable  
Diffusion.\*  
AD-A131 221

\*DIGITAL SYSTEMS  
Multivariable Linear Digital  
Control via State Space Output  
Matching.\*  
AD-A129 262  
Synthesis of Optimal Digital  
Controller for Continuous-Data  
Model-Following.\*  
AD-A129 288

\*DIP COATING  
Dip Process Thermal-Barrier  
Coatings for Superalloys.\*  
AD-A129 292

\*DIPOLE MOMENTS  
Reprint: Configurational  
Characteristics of the  
Polysulfides. 3. Dipole Moments of  
Poly(trimethylene sulfide) and  
Comparisons between some  
Polysulfides and the Corresponding  
Polyoxides.  
AD-A128 159  
Reprint: Configurational  
Characteristics of the  
Polysulfides. 2. Dipole Moments and  
Gauche Effects in Poly (1,3-  
dithiocane).  
AD-A128 160  
Reprint: Electric Dipole Moments  
of Excited Vibrational Levels in  
the XIAl State of Formaldehyde by  
Stimulated Emission Spectroscopy.  
AD-A129 147

\*DISTRIBUTED DATA PROCESSING  
Event-Based Specification and  
Verification of Distributed  
Systems.\*  
AD-A128 629  
An Approach to Expert Systems

for Mechanical Design.\*  
AD-A131 340

\*DISTRIBUTION FUNCTIONS  
Limit Laws for the Maximum of  
Weighted and Shifted I.I.D. Random  
Variables.\*  
AD-A128 359  
On Limiting Distributions of  
Order Statistics with Variable  
Ranks from Stationary Sequences.\*  
AD-A128 484  
On a Problem Concerning  
Spacings.\*  
AD-A128 509  
Reprint: The Occupational  
Statistics for Indistinguishable  
Trimers on a 3XN Lattice Space.  
AD-A129 219  
IFR (Increasing Failure Rate)  
for Repairable Systems.\*  
AD-A129 553  
Weak and Strong Law Results for  
a Function of the Spacings.\*  
AD-A130 705

\*DYE LASERS  
Experimental Study of  
Dissociative Attachment in  
Optically-Pumped Lithium  
Molecules.\*  
AD-A131 601

\*DYNAMICS  
The Quantum Dynamics of Chemical  
Reactions.\*  
AD-A130 160

\*EARTHQUAKES  
Simulation of Ground Motions  
from the 1971 San Fernando  
Earthquake and an Aftershock of the  
1975 Oroville Earthquake.\*  
AD-A131 206

\*ECONOMIC ANALYSIS  
An Approach to Expert Systems  
for Mechanical Design.\*  
AD-A131 340

\*EDITING

SUBJECT INDEX-9  
UNCLASSIFIED EVN35A

OIA-EDI

# UNCLASSIFIED

The Intelligent Program Editor:  
A Knowledge Based System for  
Supporting Program and  
Documentation Maintenance.\*  
AD-A129 153

\*EJECTION  
Cervical Spine Analysis for  
Ejection Injury Prediction.\*  
AD-A131 081

\*ELECTRIC DISCHARGES  
Aerodynamics of E-Beam Sustained  
Discharges in Flow.\*  
AD-A130 100

\*ELECTRIC FIELDS  
Effects of Nonconvective  
Electric Fields on Magnetospheric  
Plasma Dynamics.\*  
AD-A128 432

\*ELECTRICAL CONDUCTIVITY  
Metallurgical Characterization  
of Niobium/Tin Superconducting  
Multifilamentary Wires.\*  
AD-A131 018

\*ELECTRICAL ENGINEERING  
USAF/SCEE Summer Faculty  
Research Program. Research Reports.  
Volume 1.\*  
AD-A130 759

\*ELECTRICAL PROPERTIES  
Reprint: Electrical and Optical  
Properties of InP Grown by  
Molecular Beam Epitaxy Using  
Cracked Phosphine.  
AD-A131 264

\*ELECTROCHEMISTRY  
Fundamental Studies of  
Underpotential Metal Deposition and  
Trace Analysis Using Solid  
Electrodes.\*  
AD-A130 099

Reprint: Structure and  
Composition of Adsorbed Layers  
Formed by Sequential Exposure of  
Pt(100) and Pt(111) to Pairs of

Compounds: Solvents and  
Electrolytic Substances.  
AD-A131 607

\*ELECTRODEPOSITION  
Fundamental Studies of  
Underpotential Metal Deposition and  
Trace Analysis Using Solid  
Electrodes.\*  
AD-A130 099

\*ELECTRODES  
Reprint: Structure and  
Composition of Adsorbed Layers  
Formed by Sequential Exposure of  
Pt(100) and Pt(111) to Pairs of  
Compounds: Solvents and  
Electrolytic Substances.  
AD-A131 607

\*ELECTRODYNAMICS  
Effects of Nonconvective  
Electric Fields on Magnetospheric  
Plasma Dynamics.\*  
AD-A128 432

\*ELECTROENCEPHALOGRAPHY  
Reprint: Effects of Ongoing EEG  
on Latency Measurements of Evoked  
Potentials.  
AD-A129 520  
Reprint: Preprocessing for  
Improved Classification of Evoked  
Potentials.  
AD-A129 645

\*ELECTROMAGNETIC RADIATION  
The Interaction of  
Electromagnetic Radiation with  
Solid Materials.\*  
AD-A130 727

\*ELECTROMAGNETIC SCATTERING  
Coherent Scattering of Light  
into High Frequency Radiowaves.\*  
AD-A130 691

\*ELECTROMECHANICAL CONVERTERS  
Coordinated Research Program in  
Pulsed Power Physics.\*  
AD-A129 554

\*ELECTRON BEAMS  
A Study of the Angular Radiation  
Pattern of Smith-Purcell  
Radiation.\*  
AD-A130 095  
Aerodynamics of E-Beam Sustained  
Discharges in Flow.\*  
AD-A130 100

\*ELECTRON ENERGY  
Reprint: On the Reaction Mg N2O  
Yields MgO N2.  
AD-A131 605

\*ELECTRON IMPACT SPECTRA  
Reprint: Azimuthal Dependence of  
Impact Scattering in Electron  
Energy Loss Spectroscopy.  
AD-A128 476

\*ELECTRON SPECTROSCOPY  
Reprint: Isomers of (PhMeSi)6  
and (PhMeSi)5.  
AD-A128 428

Reprint: Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational  
Structure of Molecular Ions.  
AD-A128 448

Reprint: Adsorbate Structure  
Modeling Based on Electron Energy  
Loss Spectroscopy and Lattice  
Dynamical Calculations. Application  
to O/A1(111).  
AD-A128 464

Reprint: Azimuthal Dependence of  
Impact Scattering in Electron  
Energy Loss Spectroscopy.  
AD-A128 476  
High Resolution Electron Energy  
Loss Studies of Chemisorbed Species  
on Aluminum and Titanium.\*  
AD-A129 204

\*ELECTRONIC STATES  
Relativistic Calculations and  
Measurements of Energies, Auger  
Rates, and Lifetimes.\*  
AD-A130 094

\*ELECTRONICS

SUBJECT INDEX-10  
UNCLASSIFIED EVN35A

EJE-ELE

# UNCLASSIFIED

Research in Electronics: Joint  
Services Electronics Program.\*  
AD-A130 791

\*ELECTRONS  
Computation of Counting  
Distributions Arising from a Single-  
Stage Multiplicative Process.\*  
AD-A131 480

\*ELEMENTARY PARTICLES  
New Method in Elementary  
Particle Detection.\*  
AD-A131 238

\*EMISSION SPECTRA  
Radiation and Laser Potential of  
Homo and Heteronuclear Rare-Gas  
Diatomic Molecules.\*  
AD-A130 093

Reprint: Deexcitation of Light  
Li-Like Ions in the  $1s2s2p$  State.  
AD-A131 556  
Reprint: Evaluation of  
Diffraction Stimulated Emission as a  
Potential Analytical Measurement  
Technique.  
AD-A131 590

EMISSION SPECTROSCOPY  
Reprint: Electric Dipole Moments  
of Excited Vibrational Levels in  
the  $X1A1$  State of Formaldehyde by  
Stimulated Emission Spectroscopy.  
AD-A129 147  
Sequential Excitation  
Preparation of Molecular Energy  
Levels with Special Structural and  
Chemical Properties.\*  
AD-A129 307

\*EMULSIONS  
Reprint: Magnetic Field and  
Magnetic Isotope Effects on  
Photoinduced Emulsion  
Polymerization.  
AD-A128 671

\*ENDOCRINE GLANDS  
Reprint: Neuroendocrine and  
Metabolic Factors in Pulmonary

Circulatory Control.  
AD-A129 685

\*ENERGY LEVELS  
Reprint: K-MM Auger-Intensity  
Peaks from Double-Hole Energy-Level  
Crossings.  
AD-A130 053

\*ENERGY TRANSFER  
Reprint: On the Reaction Mg N2O  
Yields MgO N2.  
AD-A131 605

\*ENZYMES  
Reprint: The Influence of  
Triiodothyronine on Polyadenosine-  
Diphosphoribose Polymerase and RNA  
Synthesis in Cardiacocyte Nuclei.  
AD-A129 519

\*EPOXY LAMINATES  
Fracture Mechanics of Transverse  
Cracks and Edge Delamination in  
Graphite-Epoxy Composite  
Laminates.\*  
AD-A129 313  
Fracture Mechanics of Sub-  
Laminar Cracks.\*  
AD-A130 782

\*EQUATIONS  
Reprint: Instability of a Half-  
Space with Frictional Materials.  
AD-A128 156  
Stability of Compressible Wake  
and Jet Flows.\*  
AD-A128 414

\*EQUILIBRIUM(GENERAL)  
Stable Equilibria in a Scalar  
Parabolic Equation with Variable  
Diffusion.\*  
AD-A131 221

\*ESTIMATES  
Reprint: Nonparametric Empirical  
Bayes Estimation of Reliability.  
AD-A128 475  
A Note on the Functional  
Estimation of Values of Hidden

Variables --- An Extended Module  
for Expert Systems.\*  
AD-A130 749

\*EXCITATION  
Sequential Excitation  
Preparation of Molecular Energy  
Levels with Special Structural and  
Chemical Properties.\*  
AD-A129 307

\*EXCITONS  
Measurement of High Mobilities  
and Strain Confinement of Long-  
Lived Free Excitations in Cu2O.\*  
AD-A128 486  
Exciton-Laser Amplifier.\*  
AD-A130 036

\*EXERCISE(PHYSIOLOGY)  
Effects of Exhaustive Exercise  
on the Sleep of Men and Women.  
AD-A129 670

\*EXHAUSTION(PSYCHOLOGICAL)  
Effects of Exhaustive Exercise  
on the Sleep of Men and Women.  
AD-A129 670

\*EXPERIMENTAL DESIGN  
Pairwise Orthogonal  $F$ -Rectangle  
Designs.\*  
AD-A128 099  
An Approach to Expert Systems  
for Mechanical Design.\*  
AD-A131 340

\*EXPONENTIAL FUNCTIONS  
Reprint: Phase Plane and  
Guggenheim Methods for Treatment of  
Kinetic Data.  
AD-A129 207

\*EXTRACTION  
Three-Dimensional Feature  
Extraction.\*  
AD-A131 333

\*EYE MOVEMENTS  
Eye Movements and Visual  
Information Processing.\*

SUBJECT INDEX-11  
UNCLASSIFIED EVN35A

ELE-EYE

# UNCLASSIFIED

AD-A129 225

## \*FABRICATION

Reprint: Influence of Fabric on Liquefaction and Densification Potential of Cohesionless Sand.  
AD-A130 949

## \*FABRICS

Reprint: A Statistical Study of Fabric in a Random Assembly of Spherical Granules.  
AD-A130 742

## \*FACTORIAL DESIGN

Reprint: The Family of t-Designs. Part II  
AD-A129 217

## \*FAILURE

IFR (Increasing Failure Rate) for Repairable Systems.\*  
AD-A129 553

## \*FATIGUE LIFE

On Bayes Estimation of Reliability for the Birnbaum-Saunders; Fatigue Life Model.\*  
AD-A128 477

## \*FATIGUE (MECHANICS)

Mechanisms of Corrosion Fatigue in High Strength I/M (Ingot Metallurgy) and P/M (Powder Metallurgy) Aluminum Alloys.\*  
AD-A130 041

Fatigue Behavior of Long and Short Cracks in Wrought and Powder Aluminum Alloys.\*  
AD-A131 324

## \*FEASIBILITY STUDIES

A Study of Texture Analysis Algorithms.\*  
AD-A131 498

## \*FIBER OPTICS

Thin-Film Guided-Wave Devices for Integrated/Fiber Optic Signal Processing and Communications.\*  
AD-A129 582

Investigation of Optical Fibers for Nonlinear Optics.\*  
AD-A130 656

## \*FILTERS

Optimal Constrained Representation and Filtering of Signals.\*  
AD-A129 157

## \*FINITE ELEMENT ANALYSIS

Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates.\*  
AD-A129 313

Mixed Finite Element Methods with Applications to Flow and Other Problems.\*  
AD-A130 678

## \*FRACTURE MECHANICS OF SUB-

Laminate Cracks.\*  
AD-A130 782

Moving Finite Elements in 2-D.\*  
AD-A131 279

Effects of Rigid Inclusions on Wave Propagation.\*  
AD-A131 366

## \*FISTULAS

Reprint: A Modification for Preparing the Chronic Lung-Lymph Fistula in Sheep.  
AD-A129 518

## \*FLIGHT SIMULATION

Advanced Training Techniques Using Computer Generated Imagery.\*  
AD-A129 215

## \*FLIGHT SIMULATORS

Assessment and Development of Oculomotor Flying Skills by the Application of the Channel Theory of Vision.\*  
AD-A129 534

## \*FLIGHT TRAINING

Reprint: The Chronic Lung-Lymph Fistula in Sheep.  
AD-A129 518

## \*FLIGHT SIMULATORS

Assessment and Development of Oculomotor Flying Skills by the Application of the Channel Theory of Vision.\*  
AD-A129 534

## \*FLIGHT TRAINING

Reprint: The Chronic Lung-Lymph Fistula in Sheep.  
AD-A129 518

Advanced Training Techniques Using Computer Generated Imagery.\*  
AD-A129 215

## \*FLOW

Mixed Finite Element Methods with Applications to Flow and Other Problems.\*  
AD-A130 678

## \*FLOW FIELDS

On the Structure of an Underexpanded Rectangular Jet.\*  
AD-A129 227

Unsteady Transonic Flow in a Two-Dimensional Diffuser: Interpretation of Experimental Results.\*  
AD-A129 406

## \*FLUORESCENCE

Reprint: Conjectures on the Origin of the Surface Glow of Space Vehicles.  
AD-A128 637

## \*FLUORINE

Reprint. New Syntheses of Pentafluorotellurium Hypochlorite.  
AD-A128 427

## \*FORMALDEHYDE

Reprint: Electric Dipole Moments of Excited Vibrational Levels in the XIAl State of formaldehyde by Stimulated Emission Spectroscopy.  
AD-A129 147

## \*FOURIER TRANSFORMATION

Reprint: Uniqueness of Phase Retrieval for Functions with Sufficiently Disconnected Support.  
AD-A129 994

## \*FRACTURE (MECHANICS)

Fracture Mechanics of Sub-Laminate Cracks.\*  
AD-A130 782

## \*FREE ELECTRONS

A Study of the Angular Radiation

SUBJECT INDEX-12  
UNCLASSIFIED EVN35A

FAB-FRE

# UNCLASSIFIED

- Pattern of Smith-Purcell Radiation.\*  
AD-A130 095
- \*FREQUENCY DIVIDERS  
Coherent Scattering of Light into High Frequency Radiowaves.\*  
AD-A130 691
- \*FRONTSCATTER (METEOROLOGY)  
Reprint: Comparison of Tropicopause Height and Frontal Boundary Locations Based on Radar and Radiosonde Data.  
AD-A128 467
- \*FUEL INJECTION  
Transverse Jet Break-up and Atomization with Rapid Vaporization along the Trajectory.\*  
AD-A130 706
- \*FUNCTIONS (MATHEMATICS)  
Dominates on Equivalence Classes of Subgroup Operations.\*  
AD-A128 463  
Reprint: Uniqueness of Phase Functions for Functions with Infinitely Disconnected Support.  
AD-A128 944  
Reprint: Plasma Response Functions: Fluctuation Dissipation Relations and the Velocity Average Approximation.  
AD-A131 505
- \*GAME THEORY  
Robust Prediction and Interpolation for Vector Stationary Processes.\*  
AD-A130 973
- \*GAMMA RAYS  
Study of a Nuclear Gamma-Ray Laser.\*  
AD-A129 571
- \*GAS DISCHARGES  
Reprint: Spatial Dependence of the Strong Optogalvanic Effects Due to Metastable Quenching in a DC Helium Discharge.  
AD-A129 248
- \*GAS DYNAMICS  
Reprint: Model for the Propagation of Pulsed Surface Polaritons with Quasi Self-Induced Transparency.  
AD-A128 446  
Studies in Non-Equilibrium Statistical Mechanics.\*  
AD-A129 338
- \*GAS TURBINES  
Unsteady Swirling Flows in Gas Turbines.\*  
AD-A128 386
- \*GELATION  
Final Report on AFOSR ST-0042.\*  
AD-A130 101
- \*GEOMAGNETISM  
A Project to Develop an Index of PC 3.4.5 Geomagnetic Pulsations and to Study Their Control by Solar Wind Parameters.\*  
AD-A130 135  
Sources of Surface Magnetic Field Variability.\*  
AD-A130 168  
Geomagnetic Pulsations-Production/Interpretation.\*  
AD-A131 448
- \*GERMANIUM COMPOUNDS  
Reprint: Response to (Comments on Tunneling Alpha Squared Frequency) as a Function of Composition in A15 BGe<sub>1-x</sub> by B. R. Sood.  
AD-A131 584
- \*GLOW DISCHARGES  
Reprint: Spatial and Temporal Studies of a Glow Discharge.  
AD-A128 461  
Reprint: Conjectures on the Origin of the Surface Glow of Space Vehicles.  
AD-A128 637  
Experimental and Theoretical Investigation of Optogalvanic Effects.\*  
AD-A130 111
- \*GRAMMARS  
Flexible Parsing.\*  
AD-A131 495
- \*GRANULES  
Reprint: A Statistical Study of Fabric in a Random Assembly of Spherical Granules.  
AD-A130 742
- \*GRAPHITE  
Structural and Kinetic Properties of Graphite Intercalation Compounds.\*  
AD-A129 579  
Thermal and Physical Properties of Graphite Intercalation Compounds.\*  
AD-A129 677  
Reprint: Superconductivity of the Graphite Intercalation Compounds HgC<sub>8</sub> and RbHgC<sub>8</sub>: Evidence from Specific Heat.  
AD-A129 759  
Reprint: Superconductivity and Isotopic Specific Heat of the Alkali Metal Monographites (Rb,K) HgC<sub>8</sub>  
AD-A130 857  
Reprint: Heat Capacity and Magnetic Studies of Graphite Intercalated with FeCl<sub>3</sub> and HClO<sub>4</sub>  
AD-A131 380
- \*GRAPHITIZED MATERIALS  
Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates.\*  
AD-A129 313
- \*GRAVITY WAVES  
Reprint: The Transient Critical-Level Interaction in a Boussinesq Fluid.  
AD-A128 462

SUBJECT INDEX-13  
UNCLASSIFIED EVN35A

FRE-GRA

# UNCLASSIFIED

## \*GREENS FUNCTION

Scattering of Waves by  
Irregularities in Periodic Discrete  
Lattice Spaces 2 Calculations. +  
AD A130 665

## \*GRIDS

Research on Topics in Transonic  
Flow Theory and Adaptive Grid  
Generation +  
AD A128 485

## \*GROUND MOTION

An Experimental Study of  
Atmospheric Ionospheric Coupling  
Using Magnetospheric +  
AD A130 637

Studies on Ground Motions  
From the 1971 San Fernando  
Earthquake and its Aftermath  
1475 Gravity and Acceleration  
0 A131 65

## \*GROUND STATE

A point group study of  
Molecules 361 669 Calculations  
for Molecular Grounding States  
0 A132 11

## \*GROWTH

Study of Crystal Defects and  
Transport Properties vs Growth  
Parameters of Growing Conditions  
in III V Compound Semiconductors. +  
AD A130 756

## \*GROUP V COMPOUNDS

Study of Crystal Defects and  
Transport Properties vs Growth  
Parameters and Growing Conditions  
in III V Compound Semiconductors. +  
AD A130 776

## \*GROUP MATHEMATICS

Geometry of Pivotalized Classes  
of Group Subgroups +  
AD A128 463  
Characterizing Domains on a  
Family of Triangular Forms. +  
AD A128 482

## \*GYROSCOPES

Nuclear Magnetic Resonance  
Gyroscope. +  
AD A130 102  
Background Information on the  
Her31 Nuclear Gyroscope. +  
AD A130 255  
Nuclear Moment Alignment,  
Relaxation and Detection  
Mechanisms. +  
AD A131 546

## \*HALIDES

Alkali Rare Gas and Metal-Halide  
Molecules as Potential Tunable and  
Efficient Lasers in the Visible. +  
AD A125 534

## \*HALOGEN COMPOUNDS

Reprints: Reactions of  
Azidobisfluoromethane with Halogen-  
Containing Oxidizers. +  
AD A123 416

## \*HALOGENATED HYDROCARBONS

The Electrophysiological  
Mechanism of Halogenated Alkane  
Anaphrodisia. +  
AD A128 424

## \*HEAD (CRANIOLOGY)

Cervical Spine Analysis for  
Ejection Injury Prediction. +  
AD A131 081

## \*HEAT TRANSFER

Transient Heat Transfer in  
Coated Superconductors. +  
AD A129 600

## \*HIGH RESOLUTION

Reprint: Versatile, High  
Resolution Continuum Source Atomic  
Absorption Flame Spectrometer with  
Resonance Flame Detector. +  
AD A129 513

## \*HMX

Specific Heat of Octahydro-  
1,3,5,7 - Tetranitro - 1,3,5,7 -  
Tetrazine (HMX). +

## AD-A128 442

## \*HOLOGRAPHY

1982 Gordon Research Conference  
on Holography and Optical  
Information Processing. +  
AD A129 137

Use of Holographic Linear Fringe  
Linearization Interferometry (FLI)  
for Detection of Defects. +  
AD A129 323

White-Light Optical Information  
Processing and Holography. +  
AD A129 592

Space-Variant Optical Systems. +  
AD A130 096

Optical Systems and Statistical  
Optics. +  
AD A131 297

## \*HYDROGEN CHLORIDE

Reprint: Collinear Quantum  
Mechanical Probabilities and Rate  
Constants for the Br<sup>-</sup> HCl (v=2,3,4)  
Reaction Using Hyper spherical  
Coordinates. +  
AD A128 474

## \*HYDROGEN FLUORIDE LASERS

Relational Relaxation Studies of  
Hydrogen Fluoride. +  
AD A128 384

## \*HYDROGEN PEROXIDE

Study of the Chlorine Basic  
Hydrogen Peroxide Reaction. +  
AD A129 372

## \*HYDROLASES

Reprint: Mitochondrial App-  
Corovitaminase System  
AD A128 059

## \*HYPOCHLORITES

Reprint: New Synthesis of  
Pentafluorostannum Hypochlorite.  
AD A128 427

## \*ILLUMINATION

Reprint: Spatial Dependence of  
the Strong Optogalvanic Effects Due

SUBJECT INDEX-14  
UNCLASSIFIED EVN35A

GRE-11L

# UNCLASSIFIED

- to Metastable Quenching in a DC Helium Discharge  
AD A129 248
- IMAGE PROCESSING
  - Advanced Imaging Techniques  
Using Computer Generated Imagery.  
AD A129 245
  - Adaptive Hybrid Picture Coding.  
AD A129 221
  - Interim Report for CY 1982.  
AD A129 261
  - White Light Optical Information Processing and Holography.  
AD A129 582
  - A Study of Feature Analysis Algorithms.  
AD A130 034
  - Lateral Correlations in Geologic Structure and Feature Getting from Remote Sensing Data.  
AD A130 758
  - Three Dimensional Feature Extraction.  
AD A131 323
- IONOSPHERICS
  - Reprint: Theoretical and Optical Aspects of Ion Glow by Backscattered Light Using Gridded Plasma.  
AD A131 264
- INFORMATION PROCESSING
  - Eye Movements and Visual Information Processing.  
AD A129 225
  - Nonlinear Real Time Optical Signal Processing.  
AD A129 294
  - Design of a System That Understands Informal Specifications.  
AD A131 474
- INFORMATION RETRIEVAL
  - Artificial Intelligence Implications for Information Retrieval.  
AD A131 382
- INFORMATION THEORY
  - Robust Linear Filtering for Multivariable Stationary Time Series.  
AD A131 209
- INFRARED OPTICAL MATERIALS
  - Characterization of Infrared Optical Properties of Transparent Materials.  
AD A131 554
- INFRARED RADIATION
  - Microwaves and Thermoregulation: A Symposium.  
AD A129 560
  - Reprint: Infrared Nonlinear Optics.  
AD A129 993
- INFRARED SPECTROSCOPY
  - Infrared Chemiluminescence Studies of Ion Molecule Reactions in a Flowing Afterglow.  
AD A130 138
- INTEGRAL EQUATIONS
  - Reprint: The Unique Solvability of the Null Field Equations of Acoustics.  
AD A129 253
- INTEGRALS
  - Reprint: Spherical-Harmonic Expansion Techniques for Multicenter Integrals over STO's (Slater Type Orbitals). A PC Examination for Vector Processing Computers.  
AD A128 429
- INTEGRATED SYSTEMS
  - Thin-Film Guided-Wave Devices for Integrated Fiber Optic Signal Processing and Communications.  
AD A129 582
- INTERACTIONS
  - Aerodynamics of E Beam Sustained Discharges in Flow.  
AD A130 100
- INTERFEROMETERS
  - Use of Holographic Linear Fringe Linearization Interferometry (FLI) for Detection of Defects.  
AD A129 323
- INTERNAL WAVES
  - Reprint: The Transient Critical-Level Interaction in a Boussinesq Fluid.  
AD A128 462
- INVENTORY CONTROL
  - Parts and Service Demand Distribution Generated by Primary Production.  
AD A131 497
- INVERSE SCATTERING
  - Reprint: The Three Dimensional Inverse Scattering Problem for Acoustic Waves.  
AD A128 450
- INVERSION
  - Error Free Parallel High-Order Convergent Iterative Matrix Inversion Based on p ADIC Approximation.  
AD A128 418
- ION BEAMS
  - Effects of Atmospheric Inhomogeneity on Long Range Ion Beam Propagation.  
AD A128 492
  - Reprint: Theoretical Aspects of Cluster Formation by keV Bombardment of Rare-Gas Solids.  
AD A131 283
  - Experimental Study of Dissociative Attachment in Optically-Pumped Lithium Molecules.  
AD A131 501
- ION IMPLANTATION
  - Reprint: Profiling the Implanted Region in Si Using Nondestructive Transverse Acoustoelectric Voltage versus Voltage Technique.

SUBJECT INDEX-15  
UNCLASSIFIED EVN35A

IMA-10N

# UNCLASSIFIED

AD-A129 229  
 \*IONIZATION  
 Latitudinal Variations of  
 Auroral-Zone Ionization  
 Distribution.  
 AD-A128 612  
 Reprint: Semi-Classical Theory of  
 Collisional Ionization  
 AD-A130 054

\*IONOSPHERE  
 An Experimental Study of  
 Atmosphere-Ionosphere Coupling  
 Using Magnetometers.  
 AD-A130 057

\*IONOSPHERIC DISTURBANCES  
 Plasma Wave Turbulence and  
 Particle Heating Caused by Electron  
 Beams, Radiation, and Pinches.  
 AD-A129 320

\*IONS  
 Reprint: Deexcitation of Light  
 Li Like Ions in the 1s2s2p State.  
 AD-A131 556

\*ISOLATION  
 Reprint: Isomeric Sigma and Pi  
 Radicals from Carboxylic Acids and  
 Amides  
 AD-A128 453

\*ISOMERS  
 Reprint: Isomers of (PhMeSi)6  
 and (PhMeSi)5.  
 AD-A129 428

\*ISOSTATIC PRESSING  
 Hot Isostatic Pressing of  
 Ceramic Powder Compacts.  
 AD-A131 514

\*ITERATIONS  
 Error-Free Parallel High-Order  
 Convergent Iterative Matrix  
 Inversion Based on p-ADIC  
 Approximation.  
 AD-A128 418  
 Block Iterative Methods for

Elliptic Finite Element Equations.  
 AD-A129 150  
 An Iterated Logarithm Law Result  
 for Extreme Values from Gaussian  
 Sequences.  
 AD-A129 559  
 Reprint: Estimation under  
 Reliability Growth Assuming Gamma  
 Failure Models.  
 AD-A130 063

\*JET ENGINE FUELS  
 Sublethal Effects of JP-4 on  
 Lepomis macrochirus.  
 AD-A128 618

\*JET ENGINES  
 Catalytic Combustion for  
 Advanced Jet Engines.  
 AD-B075 283L

\*JET FLOW  
 Stability of Compressible Wake  
 and Jet Flows.  
 AD-A128 414

\*JET MIXING FLOW  
 Transverse Jet Break-up and  
 Atomization with Rapid Vaporization  
 along the Trajectory.  
 AD-A130 706

\*KINETIC THEORY  
 Kinetic Theory.  
 AD-A129 437

\*KINETICS  
 Theoretical Studies of Kinetic  
 Mechanisms of Negative Ion  
 Formation in Plasmas.  
 AD-A129 832

\*LASER AMPLIFIERS  
 Exciton-Laser Amplifier.  
 AD-A130 036

\*LASER BEAMS  
 Coordinated Research Program in  
 Pulsed Power Physics.  
 AD-A129 554  
 Reprint: Evaluation of

Diffraction Stimulated Emission as a  
 Potential Analytical Measurement  
 Technique.  
 AD-A131 590

\*LASER INDUCED FLUORESCENCE  
 Research Studies on Radiative  
 Collisional Processes.  
 AD-A 28 533  
 Infrared Chemiluminescence  
 Studies of Ion-Molecule Reactions  
 in a Flowing Afterglow.  
 AD-A130 138  
 Chemically Reacting Turbulent  
 Shear Layers.  
 AD-A131 553

\*LASERS  
 Study of a Nuclear Gamma-Ray  
 Laser.  
 AD-A129 571  
 A Study of the Angular Radiation  
 Pattern of Smith-Purcell  
 Radiation.  
 AD-A130 005  
 Aerodynamics of E-Beam Sustained  
 Discharges in Flow.  
 AD-A130 100  
 Reprint: Large-Signal Results  
 for Degenerate Four-Wave Mixing and  
 Phase Conjugate Resonators.  
 AD-A131 311

\*LATTICE DYNAMICS  
 Reprint: Adsorbate Structure  
 Modeling Based on Electron Energy  
 Loss Spectroscopy and Lattice  
 Dynamical Calculations. Application  
 to O/AI(111).  
 AD-A128 464

\*LAYERS  
 Structural and Kinetic  
 Properties of Graphite  
 Intercalation Compounds.  
 AD-A129 579  
 Chemically Reacting Turbulent  
 Shear Layers.  
 AD-A131 553

\*LEAST SQUARES METHOD

SUBJECT INDEX -16  
 UNCLASSIFIED EVN35A

ION-LEA



# UNCLASSIFIED

Reprint: A Comparison between  
Maximum Likelihood and Generalized  
Least Squares in a Heteroscedastic  
Linear Model  
AD A129 102

IRF TESTS  
Reprint: IFR Test Results for  
for Regressive Systems  
AD A129 103

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 104

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 105

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 106

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 107

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 108

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 109

GROUP SYSTEMS  
Reprint: Prediction and Control for  
for Regressive Systems  
AD A129 110

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 111

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 112

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 113

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 114

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 115

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 116

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 117

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 118

GROUP PHASES  
Reprint: Influence of Fabric on  
Interfacial and Densification  
Potential of Cohesionless Sand  
AD A129 119

Geomagnetic Pulsations-  
Production/Interpretation  
AD A131 448

MAGNETOSPHERE  
Effects of Nonconvective  
Electric Fields on Magnetospheric  
Plasma Dynamics  
AD A129 122

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 081

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 082

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 083

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 084

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 085

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 086

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 087

MAINTENANCE  
Reprint: Periodic Replacement  
With Increasing Minimal Repair  
Costs at Failure  
AD A130 088

LIF-MAT

SUBJECT INDEX-17  
UNCLASSIFIED  
EVN35A

# UNCLASSIFIED

Distortion.\*  
AD-A129 648  
Reprint: Signal Processing in  
Evoked Potential Research:  
Applications of Filtering and  
Pattern Recognition  
AD-A129 651  
Robust Linear Filtering for  
Multivariable Stationary Time  
Series.\*  
AD-A131 209  
Approximation Methods in  
Multidimensional Filter Design and  
Related Problems Encountered in  
Multidimensional System Design.\*  
AD-A131 316

\*MATHEMATICAL MODELS  
On Bayes Estimation of  
Reliability for the Birnbaum-  
Saunders Fatigue Life Model.\*  
AD-A128 477  
Multivariate Dependent Renewal  
Processes.\*  
AD-A128 818  
Reprint: A Comparison between  
Maximum Likelihood and Generalized  
Least Squares in a Heteroscedastic  
Linear Model.  
AD-A129 162  
Reprint: Spectral Analysis:  
Prediction and Extrapolation.  
AD-A129 218  
Adaptive Hybrid Picture Coding.\*  
AD-A129 221  
Synthesis of Optimal Digital  
Controller for Continuous-Data  
Model-Following.\*  
AD-A129 288  
Prediction of Future  
Observations in Polynomial Growth  
Curve Models. Part 1.\*  
AD-A129 359  
Reprint: Effects of Ongoing EEG  
on Latency Measurements of Evoked  
Potentials.  
AD-A129 520  
Reprint: Robust Signal  
Processing for Communication  
Systems.  
AD-A129 761

Reprint: Estimation under  
Reliability Growth Assuming Gamma  
Failure Models.  
AD-A130 063  
Asymptotic Methods in  
Reliability Theory: A Review.\*  
AD-A130 163  
Reprint: Reliability Analysis of  
a Parallel System with Exponential  
Life Times and Phase Type Repairs.  
AD-A130 682  
Cervical Spline Analysis for  
Ejection Injury Prediction.\*  
AD-A131 081  
Parts and Service Demand  
Distribution Generated by Primary  
Production.\*  
AD-A131 497

\*MATHEMATICAL PREDICTION  
Reprint: Prediction and Power  
Transformations When the Choice of  
Power is Restricted to a Finite  
Set.  
AD-A129 163  
Analysis of a Delayed Delta  
Modulator.\*  
AD-A131 208

\*MATHEMATICS  
Analysis of the Howells-  
Applbaum Algorithm in the Presence  
of Moving Interference. The Use of  
Lattice Filters in Adaptive Array  
Processors. Stability Analysis of  
LMS Adaptive Filters. Adaptive  
Array Processors with Moving  
Interference.\*  
AD-A130 218

\*MATRICES(MATHEMATICS)  
Error-Free Parallel High-Order  
Convergent Iterative Matrix  
Inversion Based on p-ADIC  
approximation.\*  
AD-A128 418

\*MAXIMUM LIKELIHOOD ESTIMATION  
Reprint: A Comparison between  
Maximum Likelihood and Generalized  
Least Squares in a Heteroscedastic  
Linear Model.  
AD-A129 162  
Reprint: Spectral Analysis:  
Prediction and Extrapolation.  
AD-A129 218  
Adaptive Hybrid Picture Coding.\*  
AD-A129 221  
Synthesis of Optimal Digital  
Controller for Continuous-Data  
Model-Following.\*  
AD-A129 288  
Prediction of Future  
Observations in Polynomial Growth  
Curve Models. Part 1.\*  
AD-A129 359  
Reprint: Effects of Ongoing EEG  
on Latency Measurements of Evoked  
Potentials.  
AD-A129 520  
Reprint: Robust Signal  
Processing for Communication  
Systems.  
AD-A129 761

Linear Model.  
AD-A129 162  
Reprint: Estimation under  
Reliability Growth Assuming Gamma  
Failure Models.  
AD-A130 063  
Reprint: Maximum Likelihood  
Estimation of Unimodal and  
Decreasing Densities Based on  
Arbitrarily Right-Censored Data.  
AD-A130 217

\*MEASUREMENT  
Measurement of High Mobilities  
and Strain Confinement of Long-  
Lived Free Excitations in Cu2O.\*  
AD-A128 486  
Reprint: Focused Acoustic Beams  
for Accurate Phase Measurements.  
AD-A130 033  
Experimental and Theoretical  
Investigation of Optogalvanic  
Effects.\*  
AD-A130 111

\*MECHANICAL COMPONENTS  
Reprint: Reliability Analysis of  
a Parallel System with Exponential  
Life Times and Phase Type Repairs.  
AD-A130 682

\*MEDICAL COMPUTER APPLICATIONS  
CSRL (Conceptual Structures  
Representation Language): A  
Language for Expert Systems  
Diagnosis.\*  
AD-A131 403

\*MERCURY  
Properties of Mercury-Cadmium-  
Telluride Solid Solutions.\*  
AD-A130 224

\*MERCURY COMPOUNDS  
Thermal and Physical Properties  
of Graphite Intercalation  
Compounds.\*  
AD-A128 677  
Reprint: Superconductivity of  
the Graphite Intercalation  
Compounds KHgC8 and RbHgC8:

SUBJECT INDEX-18  
UNCLASSIFIED EVN35A

MAT-MER

# UNCLASSIFIED

Evidence from Specific Heat.  
AD-A129 759

## \*METAL COATINGS

Fundamental Research Directed to  
Advanced High Temperature Coating  
Systems Beyond the Current State-of-  
the-Art Systems.\*  
AD-A131 618

## \*METAL COMPLEXES

Reprint: Synthesis and  
Characterization of Tungsten-  
Cobalt, -Rhodium, and -Platinum  
Compounds and the X-Ray Crystal  
Structures of RhW(mu-C6H4Me-  
4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7)  
and PtW(mu-C6H4Me-4)C(O)  
(CO)(pme3)(eta4-C8H12)(eta5-C5H5).  
AD-A128 465  
Reprint: A Synthetic Route to  
Heteronuclear Clusters Containing  
Iridium and Rhodium: X-Ray Crystal  
Structures of (IrOs3(u-H)2(u-  
C1)(CO)2) and (Ir2Rh2(u-CO)(u3-  
CO)2(CO)4(n-C5Me5)2).  
AD-A128 520

## \*METAL COMPOUNDS

Reprint: On the Reaction Mg N20  
Yields MgO N2.  
AD-A131 605

## \*METAL FILMS

Fundamental Studies of  
Underpotential Metal Deposition and  
Trace Analysis Using Solid  
Electrodes.\*  
AD-A130 099

## \*METALLURGY

Metallurgical Characterization  
of Niobium/Tin Superconducting  
Multifilamentary Wires.\*  
AD-A131 018

## \*METALS

Reprint: Organic Sonochemistry.  
Sonic Acceleration of the  
Reformatsky Reaction.  
AD-A128 481

## \*METASTABLE STATE

Reprint: Spatial Dependence of  
the Strong Optogalvanic Effects Due  
to Metastable Quenching in a DC  
Helium Discharge.  
AD-A129 248

## \*METEOROLOGICAL RADAR

Investigation of Shear-Induced  
Turbulence by MST (Mesosphere-  
Stratosphere-Troposphere Radar). \*  
AD-A129 203

## \*METHANES

Reprint: Reactions of  
Azidotrifluoromethane with Halogen-  
Containing Oxidizers.  
AD-A128 416  
The Electrophysiologic  
Mechanisms of Halogenated Alkane  
Arrhythmogenesis.\*  
AD-A128 424

## \*METHODODOLOGY

Thermophysical Property  
Determinations Using Transient  
Techniques.\*  
AD-A130 707

## \*METHYL RADICALS

Reprint: The Decomposition of  
2,2,3,3-Tetramethylbutane in KCl-  
and B2O3-Coated Vessels in the  
Presence of Oxygen.  
AD-A130 683

## \*MICROSTRUCTURE

Reprint: Inherent Anisotropy and  
Shear Strength of Assembly of Oval  
Cross-Sectional Rods.  
AD-A131 616

## \*MICROWAVES

Microwaves and Thermoregulation:  
A Symposium.\*  
AD-A129 660

## \*MIGRATION

Reprint: Tritium Migration in  
Tritiated Anisole.  
AD-A128 454

## \*MILITARY EQUIPMENT

Parts and Service Demand  
Distribution Generated by Primary  
Production.\*  
AD-A131 497

## \*MINICOMPUTERS

Development of a Text-Editor  
Based Relational Data Base  
Management System.\*  
AD-A131 481

## \*MINIMAX TECHNIQUE

Reprint: Robust Hypothesis  
Testing and Robust Time Series  
Interpolation and Regression.  
AD-A129 544

## \*MIRRORS

Phase Conjugate Optical  
Resonator.\*  
AD-A130 044

Reprint: Large-Signal Results  
for Degenerate Four-Wave Mixing and  
Phase Conjugate Resonators.  
AD-A131 311

## \*MITOCHONDRIA

Reprint: Mitochondrial ADP-  
Ribosyltransferase System.  
AD-A128 669

## \*MODELS

On Automatic Generation of  
Descriptive and Normative  
Theories.\*  
AD-A129 396  
Final Report on AFOSR-81-0042.\*  
AD-A130 101

## \*MOLECULAR ENERGY LEVELS

Sequential Excitation  
Preparation of Molecular Energy  
Levels with Special Structural and  
Chemical Properties.\*  
AD-A129 307

## \*MOLECULAR IONS

Reprint: Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational

SUBJECT INDEX-19  
UNCLASSIFIED EVN35A

MET-MOL

# UNCLASSIFIED

Structure of Molecular Ions.  
AD-A128 448

\*MOLECULAR ORBITALS  
Reprint: Tritium Migration in  
Tritiated Anisole.  
AD-A128 454  
Reprint: Ground States of  
Molecules. 56. MNDO Calculations  
for Molecules Containing Sulfur.  
AD-A129 131

\*MOLECULAR PROPERTIES  
Reprint: Theoretical Aspects of  
Cluster Formation by kev  
bombardment of Rare-Gas Solids.  
AD-A131 283

\*MOLECULAR ROTATION  
Rotational Relaxation Studies of  
Hydrogen Fluoride.\*  
AD-A128 384

\*MOLECULAR STRUCTURE  
Theoretical Studies of  
Relatively Rigid Polymer Chains.\*  
AD-A128 421  
Reprint: Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational  
Structure of Molecular Ions.  
AD-A128 448

\*MOLECULAR VIBRATION  
Reprint: Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational  
Structure of Molecular Ions.  
AD-A128 448

\*MOLECULAR WEIGHT  
Theoretical Studies of  
Relatively Rigid Polymer Chains.\*  
AD-A128 421

\*MOLECULE MOLECULE INTERACTIONS  
Molecular Interactions with Many-  
Body Methods.\*  
AD-A130 040

\*MOLECULES

Experimental Study of  
Dissociative Attachment in  
Optically-Pumped Lithium  
Molecules.\*  
AD-A131 601

\*MULTICHANNEL COMMUNICATIONS  
Thin-Film Guided-Wave Devices  
for Integrated/Fiber Optic Signal  
Processing and Communications.\*  
AD-A129 582

\*MULTIPLE ACCESS  
A Collision Resolution Protocol  
with Limited Channel Sensing -  
Finitely Many Users.\*  
AD-A128 501  
Limited Sensing Random Multiple  
Access Using Binary Feedback.\*  
AD-A129 251

\*MULTIPLEXING  
Space-Variant Optical Systems.\*  
AD-A130 096

\*MULTIVARIATE ANALYSIS  
Rejection of Multivariate  
Outliers.\*  
AD-A130 686  
Likelihood Ratio Tests on  
Covariance Matrices and Mean  
Vectors of Complex Multivariate  
Normal Populations and Their  
Applications in Time Series.\*  
AD-A131 523

\*N BODY PROBLEM  
Molecular Interactions with Many-  
Body Methods.\*  
AD-A130 040

\*NARROWBAND  
Correlation and Collective Modes  
in Narrow Band Materials.\*  
AD-A131 516

\*NATURAL LANGUAGE  
Design of a System That  
Understands Informal  
Specifications.\*  
AD-A131 479

Flexible Parsing.\*  
AD-A131 495

\*NECK(ANATOMY)  
Cervical Spine Analysis for  
Ejection Injury Prediction.\*  
AD-A131 081

\*NIOBIUM COMPOUNDS  
Reprint: Response to 'Comment on  
'Tunneling alpha squared F (omega)  
as a Function of Composition in A15  
NbGe'', by B. R. Sood.  
AD-A131 584

\*NITROMETHANE  
A Mechanistic Study of  
Nitromethane Decomposition on Ni  
Catalysts.\*  
AD-A128 444

\*NITROSAMINES  
Reprint: Quantitative Isolation  
of Oligo- and Polyadenosine-  
Diphosphoribosylated Proteins by  
Affinity Chromatography from Livers  
of Normal and Dimethylnitrosamine-  
Treated Syrian Hamsters.  
AD-A129 540

\*NOISE  
Optimal Constrained  
Representation and Filtering of  
Signals.\*  
AD-A129 157

\*NONDESTRUCTIVE TESTING  
Reprint: Profiling the Implanted  
Region in Si Using Nondestructive  
Transverse Acoustoelectric Voltage  
versus Voltage Technique.  
AD-A129 289  
Reprint: Focused Acoustic Beams  
for Accurate Phase Measurements.  
AD-A130 033  
Reprint: Quantitative Evaluation  
of Real-Time Synthetic Aperture  
Acoustic Images.  
AD-A130 092  
In Situ Characterization of  
Saturated Sands and Silts for the

SUBJECT INDEX-20  
UNCLASSIFIED EVN35A

MOL-NON

# UNCLASSIFIED

Prediction of Dynamic Shear Modulus and Shear Wave Velocity.\*  
AD-A131 376

\*NONLINEAR PROGRAMMING  
Efficient Computation for Large Scale Optimization.\*  
AD-A129 293

\*NONLINEAR SYSTEMS  
A Finely Additive White Noise Approach to Nonlinear Filtering.\*  
AD-A129 224  
Reprint: Third Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures.  
AD-A130 018  
Investigation of Optical Fibers for Nonlinear Optics.\*  
AD-A130 656

\*NORMALIZING(STATISTICS)  
On Automatic Generation of Descriptive and Normative Theories.\*  
AD-A129 396

\*NOZZLES  
On the Structure of an Underexpanded Rectangular Jet.\*  
AD-A129 227

\*NUCLEAR EXPLOSION DETECTION  
Regional Discrimination with Broadband Data.\*  
AD-A128 493

\*NUCLEAR MAGNETIC RESONANCE  
Nuclear Magnetic Resonance Gyroscope.\*  
AD-A130 102  
Nuclear Moment Alignment, Relaxation and Detection Mechanisms.\*  
AD-A131 546

\*NUCLEAR MOMENTS  
Nuclear Moment Alignment, Relaxation and Detection Mechanisms.\*  
AD-A131 546

\*NUCLEAR PROPERTIES  
Study of a Nuclear Gamma-Ray Laser.\*  
AD-A129 571

\*NUCLEAR SCATTERING  
Coherent Scattering of Light into High Frequency Radiowaves.\*  
AD-A130 691

\*NUMERICAL ANALYSIS  
Research on Topics in Transonic Flow Theory and Adaptive Grid Generation.\*  
AD-A128 485

\*NUMERICAL METHODS AND PROCEDURES  
Multivariable Linear Digital Control via State Space Output Matching.\*  
AD-A129 262  
Asymptotic Methods in Reliability Theory: A Review.\*  
AD-A130 163  
Distributed Detection of Signal Waveforms in Additive Gaussian Observation Noise.\*  
AD-A131 016  
New Method in Elementary Particle Detection.\*  
AD-A131 238  
Sensor Correlation and Data Fusion Theory.\*  
AD-A131 510

\*OPERATIONS RESEARCH  
Reprint: Periodic Replacement with Increasing Minimal Repair Costs at Failure.  
AD-A130 081

\*OPTICAL ANALYSIS  
Optical Computing Research.\*  
AD-A129 166

\*OPTICAL CORRELATORS  
Optical Waveguide Spatial Filters.\*  
AD-A129 746  
Optical Pattern Recognition for Missile Guidance.\*

AD-A130 097

\*OPTICAL DATA  
Optical Computing Research.\*  
AD-A129 166

\*OPTICAL IMAGES  
A Study of Texture Analysis Algorithms.\*  
AD-A130 034

\*OPTICAL MATERIALS  
Investigation of Optical Fibers for Nonlinear Optics.\*  
AD-A130 656

\*OPTICAL PROCESSING  
1982 Gordon Research Conference on Holography and Optical Information Processing.\*  
AD-A129 137  
Optical Computing Research.\*  
AD-A129 166  
Nonlinear Real-Time Optical Signal Processing.\*  
AD-A129 291  
White-Light Optical Information Processing and Holography.\*  
AD-A129 682  
Space-Variant Optical Systems.\*  
AD-A130 096  
Optical Systems and Statistical Optics.\*  
AD-A131 297

\*OPTICAL PROPERTIES  
Phase Conjugate Optical Resonator.\*  
AD-A130 044  
The Interaction of Electromagnetic Radiation with Solid Materials.\*  
AD-A130 727  
Reprint: Electrical and Optical Properties of InP Grown by Molecular Beam Epitaxy Using Cracked Phosphine.  
AD-A121 264

\*OPTICAL PUMPING  
Experimental Study of

SUBJECT INDEX-21  
UNCLASSIFIED EVN35A

NON-OPT

# UNCLASSIFIED

Dissociative Attachment in  
Optically-Pumped Lithium  
Molecules.\*  
AD-A131 601

\*OPTICAL TARGET DESIGNATORS  
Optical Pattern Recognition for  
Missile Guidance.\*  
AD-A130 097

\*OPTICAL WAVEGUIDES  
Optical Waveguide Spatial  
Filters.\*  
AD-A129 746

\*OPTICS  
Reprint: Infrared Nonlinear  
Optics.  
AD-A129 993

Experimental and Theoretical  
Investigation of Optogalvanic  
Effects.\*  
AD-A130 111

\*ORDER STATISTICS  
On Limiting Distributions of  
Order Statistics with Variable  
Picks from Stationary Sequences.\*  
AD-A126 484

Weak and Strong Law Results for  
a Function of the Spacings.\*  
AD-A130 705

\*ORGANIC CHEMISTRY  
Reprint: Organic Sonochemistry.  
Sonic Acceleration of the  
Reformatsky Reaction.  
AD-A128 481

\*ORGANIC COMPOUNDS  
Reprint: Chemical Reactions of  
Tetramesityldisilene.  
AD-A128 457

Reprint: Organosilicon Rotanes:  
Synthesis and an Unexpected  
Rearrangement.  
AD-A128 466

\*ORGANOMETALLIC COMPOUNDS  
Reprint: Synthesis and  
Characterization of Tungsten-

Cobalt, -Rhodium, and -Platinum  
Compounds and the X-Ray Crystal  
Structures of RhW(mu-CC6H4Me-  
4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7)  
and PtW(mu-C(C6H4Me-4)C(O)  
(co)(pme3)(eta4-C8H12)(eta5-C5H5).  
AD-A128 465

\*ORTHOGONALITY  
Pairwise Orthogonal F-Rectangle  
Designs.\*  
AD-A128 099

\*OXIDATION  
Reprint: Arrhenius Parameters of  
Elementary Reactions Involved in  
the Oxidation of Neopentane.  
AD-A129 192

\*OXIDIZERS  
Reprint: Reactions of  
Azidotrifluoromethane with Halogen-  
Containing Oxidizers.  
AD-A128 416

\*OXYGEN  
Reprint: Adsorbate Structure  
Modeling Based on Electron Energy  
Loss Spectroscopy and Lattice  
Dynamical Calculations. Application  
to O/A1(111).  
AD-A128 464

Lung Metabolism, Function, and  
Morphology during Hyperoxic and  
Hyperbaric Exposure.\*  
AD-A129 661

\*PACKING DENSITY  
Hot Isostatic Pressing of  
Ceramic Powder Compacts.\*  
AD-A131 514

\*PARALLEL PROCESSING  
Reprint: Parallel Processing for  
Computer Vision.  
AD-A131 615

\*PARSERS  
Flexible Parsing.\*  
AD-A131 495

\*PARTICLE COLLISIONS  
Research Studies on Radiative  
Collisional Processes.\*  
AD-A128 533

Studies in Non-Equilibrium  
Statistical Mechanics.\*  
AD-A129 338

Reprint: Semiclassical Theory of  
Collisional Ionization.  
AD-A130 054

\*PATTERN RECOGNITION  
Optical Pattern Recognition for  
Missile Guidance.\*  
AD-A130 097

Lateral Variations in Geologic  
Structure and Tectonic Setting from  
Remote Sensing Data.\*  
AD-A130 758

\*PENTANES  
Reprint: Arrhenius Parameters of  
Elementary Reactions Involved in  
the Oxidation of Neopentane.  
AD-A129 192

\*PERTURBATIONS  
Reprint: An Example of Boundary  
Layer in Delay Equations.  
AD-A129 144

\*PHASE DIAGRAMS  
Final Report on AFOSR 81 0042.\*  
AD-A130 101

\*PHOTOCHEMICAL REACTIONS  
Reprint: Magnetic Field and  
Magnetic Isotope Effects on  
Photoinduced Emulsion  
Polymerization.  
AD-A 28 671

Reprint: Micellar Systems as  
'Supercages' for Reactions of  
Geminate Radical Pairs. Magnetic  
Effects.  
AD-A 30 157

Reprint: Infrared Multiphoton  
Dissociation and Energy-Dependent  
Absorption Cross Sections of  
Chloroethane-d(0), -2-d(1), and -  
2,2,2-d(3).

SUBJECT INDEX-22  
UNCLASSIFIED EVN35A

OPT-PHO

# UNCLASSIFIED

AD-A131 604

## \*PHOTODISSOCIATION

Alkali-Rare Gas and Metal-Halide Molecules as Potential Tunable and Efficient Lasers in the Visible.\*  
AD-A128 534

## \*PHOTOELASTICITY

Reprint: Inherent Anisotropy and Shear Strength of Assembly of Oval Cross-Sectional Rods.  
AD-A131 616

## \*PHOTOELECTRIC EMISSION

Angular-Resolved Electron Emission Studies of Microwave Materials.\*  
AD-A129 205

## \*PHOTOLUMINESCENCE

Measurement of High Mobilities and Strain Confinement of Long-Lived Free Excitations in GaP.\*  
AD-A128 486

## \*PHOTOMULTIPLIER TUBES

Computation of Counting Distributions Arising from a Single-Stage Multiplicative Process.\*  
AD-A131 480

## \*PHOTONS

Reprint: Induced Decay of Positronium and Grasers.  
AD-A130 035

## \*PHYSICAL PROPERTIES

Transport Properties of Selected Elements and Compounds in the Gaseous State. Part 2.\*  
AD-A129 060  
Thermal and Physical Properties of Graphite Intercalation Compounds.\*  
AD-A129 677

Reprint: Heat Capacity and Magnetic Studies of Graphite Intercalated with FeCl<sub>3</sub> and NiCl<sub>2</sub>.\*

AD-A131 390

## \*PILOTS

Assessment and Development of Ocultomotor Flying Skills by the Application of the Channel Theory of Vision.\*  
AD-A129 534

## \*PLASMA WAVES

Plasma Wave Turbulence and Particle Heating Caused by Electron Beams, Radiation, and Pinches.\*  
AD-A129 320

## \*PLASMAS(PHYSICS)

Effects of Nonconvective Electric Fields on Magnetospheric Plasma Dynamics.\*  
AD-A128 432

Latitudinal Variations of Auroral-Zone Ionization Distribution.\*  
AD-A128 612

Plasma Wave Turbulence and Particle Heating Caused by Electron Beams, Radiation, and Pinches.\*  
AD-A129 320

Theoretical Studies of Kinetic Mechanisms of Negative Ion Formation in Plasmas.\*  
AD-A129 832

Unified Theory of Plasma Correlations.\*  
AD-A131 478

Reprint: Plasma Response Functions, Fluctuation-Dissipation Relations and the Velocity-Average-Approximation.  
AD-A131 505

## \*PLASTIC DEFORMATION

Reprint: Instability of a Half-Space with Frictional Materials.  
AD-A128 156  
Deformation Studies in Workable Superalloys.\*  
AD-A131 606

## \*PLASTIC PROPERTIES

Reprint: A Plasticity Model for Flow of Granular Materials under Triaxial Stress States.

AD-A130 747

## \*PLATINUM

Reprint: Structure and Composition of Adsorbed Layers Formed by Sequential Exposure of Pt(100) and Pt(111) to Pairs of Compounds: Solvents and Electrolytic Substances.  
AD-A131 607

## \*POLLUTANTS

Development and Use of Anucleate Bacterial Cells to Assay the In vitro Activity of Pollutants.\*  
AD-A128 378

## \*POLYMERIZATION

Reprint: Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization.  
AD-A128 671

## \*POLYMERS

Theoretical Studies of Relatively Rigid Polymer Chains.\*  
AD-A128 421  
Reprint: Spectral Analysis of the Conformation of Polyadenosine Diphosphoribose: Evidence Indicating Secondary Structure.  
AD-A129 612

An Approach to Molecular Composites.\*

AD-A130 192

Fracture Mechanics of Sub-Laminate Cracks.\*

AD-A130 782

## \*POLYNOMIALS

Prediction of Future Observations in Polynomial Growth Curve Models. Part 1.\*  
AD-A129 359  
Reprint: Effects of Ongoing EEG on Latency Measurements of Evoked Potentials.  
AD-A129 520

## \*POLYSILANES

SUBJECT INDEX-23  
UNCLASSIFIED EVN35A

PHO-POL

# UNCLASSIFIED

Reprint: Isomers of (PhMeSi)6 and (PhMeSi)5.  
AD-A128 428

## \*POLY-SULFIDES

Reprint: Configurational Characteristics of the Polysulfides. 3. Dipole Moments of Poly(trimethylene sulfide) and Comparisons between some Polysulfides and the Corresponding Polyoxides.  
AD-A128 159

Reprint: Configurational Characteristics of the Polysulfides. 2. Dipole Moments and Gauche Effects in Poly (1,3-dithiocane).  
AD-A128 160

## \*POPULATION(MATHEMATICS)

Applications of a Unified Theory of Monotonicity in Selection Problems.\*  
AD-A128 441

Likelihood Ratio Tests on Covariance Matrices and Mean Vectors of Complex Multivariate Normal Populations and Their Applications in Time Series.\*  
AD A131 523

## \*POSITRONIUM

Reprint: Induced Decay of Positronium and Grasers.  
AD-A130 035

## \*POTENTIOMETRIC ANALYSIS

Reprint: Preprocessing for Improved Classification of Evoked Potentials.  
AD-A129 645

## \*PRIMARY WAVES(SEISMIC WAVES)

Reprint: Evidence of Tectonic Release from Underground Nuclear Explosions in Long-Period P Waves.  
AD-A129 290

## \*PROBABILITY

Reprint: Colinear Quantum

Mechanical Probabilities and Rate Constants for the Br HCl(v=2,3,4) Reaction Using Hyperspherical Coordinates.  
AD-A128 474

Reprint on Sponsored Research on Algorithmic Methods in Probability.\*  
AD-A128 536

Likelihood Ratio Tests on Covariance Matrices and Mean Vectors of Complex Multivariate Normal Populations and Their Applications in Time Series.\*  
AD-A131 523

## \*PROBABILITY DENSITY FUNCTIONS

Reprint: Maximum Likelihood Estimation of Unimodal and Decreasing Densities Based on Arbitrarily Right-Censored Data.  
AD-A130 217

\*PROBABILITY DISTRIBUTION FUNCTIONS Testing Whether New is Better than Used of a Specified Age.\*  
AD-A128 443

Reprint: Nonparametric Empirical Bayes Estimation of Reliability.  
AD A128 475

## \*PROBLEM SOLVING

Efficient Computation for Large Scale Optimization.\*  
AD-A129 293

## \*PROCESSING

Dip Process Thermal-Barrier Coatings for Superalloys.\*  
AD-A129 292

## \*PROGRAMMING LANGUAGES

CSRL (Conceptual Structures Representation Language): A Language for Expert Systems Diagnosis.\*  
AD-A131 403

## \*PROTEINS

Reprint: Quantitative Isolation of Oligo- and Polyadenosine-

Diphosphoribosylated Proteins by Affinity Chromatography from Livers of Normal and Dimethylnitrosamine-Treated Syrian Hamsters.  
AD-A129 540

Reprint: ADP-ribosylation of Ncnhistone Chromatin Proteins in Vivo and of Actin in Vitro and Effects of Normal and Abnormal Growth Conditions and Organ-Specific Hormonal Influences.  
AD-A129 703

## \*PSYCHOPHYSIOLOGY

Reprint: Comparison of Linear and Quadratic Classification of Event-Related Potentials on the Basis of Their Exogenous or Endogenous Components.  
AD-A129 522

## \*PULSE GENERATORS

Coordinated Research Program in Pulsed Power Physics.\*  
AD-A129 554

## \*PULSE TRAINS

Reprint: Response of Cracks in Structural Materials to Short Pulse Loads.  
AD-A131 565

## \*PULSED LASERS

Reprint: Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.  
AD-A128 446

## \*PULSES

Geomagnetic Pulsations-Production/Interpretation.\*  
AD-A131 448

## \*PYROLYTIC GRAPHITE

Reprint: Resistivity Anomalies and Phase Transitions in Alkali-Metal Graphite Intercalation Compounds.  
AD-A130 055

The Specific Heat, 0.4K to 90K,

SUBJECT INDEX-24  
UNCLASSIFIED EVN35A

POL-PYR



# UNCLASSIFIED

of C8K, C8Cs, C8Rb and Their Parent  
HOPG (Highly Oriented Pyrolytic  
Graphite).  
AD-A131 361  
Reprint: Low-Temperature  
Specific Heat of the Graphite  
Intercalation Compounds KC8, CsC8,  
RbC8, and Their Parent Highly  
Oriented Pyrolytic Graphite.  
AD-A131 362

\*QUANTIZATION  
Reprint: Optimum Quantization of  
Fir Wiener and Matched Filters.  
AD-A129 599

\*QUANTUM CHEMISTRY  
Relativistic Calculations and  
Measurements of Energies, Auger  
Rates, and Lifetimes.\*  
AD-A130 094

\*QUANTUM STATISTICS  
Reprint: Zeeman Transitions in  
Collisions of Na with Xe.  
AD-A129 220

\*QUANTUM THEORY  
Molecular Interactions with Many-  
Body Methods.\*  
AD-A130 040  
Reprint: K-MM Auger-Intensity  
Peaks from Double-Hole Energy-Level  
Crossings.  
AD-A130 053  
Reprint: Semiclassical Theory of  
Collisional Ionization.  
AD-A130 054  
The Quantum Dynamics of Chemical  
Reactions.\*  
AD-A130 160

\*RADIATION  
A Study of the Angular Radiation  
Pattern of Smith-Purcell  
Radiation.\*  
AD-A130 095

\*RADIATION EFFECTS  
Microwaves and Thermoregulation:  
A Symposium.\*

AD-A129 660

\*RADIOIMMUNOASSAY  
Development and Use of Anucleate  
Bacterial Cells to Assay the In  
vitro Activity of Pollutants.\*  
AD-A128 378

\*RAINFALL  
Reprint: A Relationship between  
Planetary Waves and Persistent Rain-  
and Thunderstorms in China.  
AD-A128 445

\*RAMAN SPECTROSCOPY  
Characterization of Infrared  
Optical Properties of Transparent  
Materials.\*  
AD-A131 554

\*RAMJET ENGINES  
Linear Theory of Pressure  
Oscillations in Liquid Fueled  
Ramjet Engines.\*  
AD-A130 882  
Reprint: Linear Theory of  
Pressure Oscillations in Liquid-  
Fueled Ramjet Engines.  
AD-A131 610

\*RANDOM VARIABLES  
Limit Laws for the Maximum of  
Weighted and Shifted I.I.D. Random  
Variables.\*  
AD-A128 359  
On a Problem Concerning  
Spacings.\*  
AD-A128 509

\*RARE GASES  
Radiation and Laser Potential of  
Homo and Heteronuclear Rare-Gas  
Diatomic Molecules.\*  
AD-A130 093  
Nuclear Magnetic Resonance  
Gyroscope.\*  
AD-A130 102

\*RATES  
Reprint: Colinear Quantum  
Mechanical Probabilities and Rate

Constants for the Br HCl( $v=2,3,4$ )  
Reaction Using Hyperspherical  
Coordinates.  
AD-A128 474  
Reprint: Phase-Plane and  
Guggenheim Methods for Treatment of  
Kinetic Data.  
AD-A129 207

\*RATIOS  
Likelihood Ratio Tests on  
Covariance Matrices and Mean  
Vectors of Complex Multivariate  
Normal Populations and Their  
Applications in Time Series.\*  
AD-A131 523

\*RAYLEIGH SCATTERING  
Investigation of the Rayleigh  
Critical Angle Phenomenon for the  
Characterization of Surface  
Properties.\*  
AD-A131 530  
Characterization of Infrared  
Optical Properties of Transparent  
Materials.\*  
AD-A131 554

\*RAYLEIGH WAVES  
Investigation of the Rayleigh  
Critical Angle Phenomenon for the  
Characterization of Surface  
Properties.\*  
AD-A131 530

\*REACTION KINETICS  
A Mechanistic Study of  
Nitromethane Decomposition on Ni  
Catalysts.\*  
AD-A128 444  
Reprint: Model for the  
Propagation of Pulsed Surface  
Polaritons with Quasi-Self-Induced  
Transparency.  
AD-A128 446  
Reprint: Colinear Quantum  
Mechanical Probabilities and Rate  
Constants for the Br HCl( $v=2,3,4$ )  
Reaction Using Hyperspherical  
Coordinates.  
AD-A128 474

SUBJECT INDEX-25  
UNCLASSIFIED EVN35A

QUA-REA

# UNCLASSIFIED

Reprint: Arrhenius Parameters of Elementary Reactions Involved in the Oxidation of Neopentane.  
AD-A129 192

Reprint: Phase-Plane and Guggenheim Methods for Treatment of Kinetic Data.  
AD-A129 207

Structural and Kinetic Properties of Graphite Intercalation Compounds.\*  
AD-A129 579

Reprint: Surface Termination in Chain Reactions and the Interaction with Homogeneous Termination.  
AD-A130 715

\*REACTION TIME  
Reprint: Spatial and Temporal Studies of a Glow Discharge.  
AD-A128 461

\*RECOMBINATION REACTIONS  
The Quantum Dynamics of Chemical Reactions.\*  
AD-A130 160

\*RECURSIVE FILTERS  
Reprint: Optimum Quantization of FIR Wiener and Matched Filters.  
AD-A129 599

\*REFRACTIVE INDEX  
Reprint: Third-Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures.  
AD-A130 018

\*RELAXATION  
Rotational Relaxation Studies of Hydrogen Fluoride.\*  
AD-A128 384

\*RELIABILITY  
Reprint: Nonparametric Empirical Bayes Estimation of Reliability.  
AD-A128 475

On Bayes Estimation of Reliability for the Birnbaum-Saunders Fatigue Life Model.\*  
AD-A128 477

Multivariate Dependent Renewal Processes.\*  
AD-A128 818

On the Reliability of Repairable Systems.\*  
AD-A130 037

Reprint: Periodic Replacement with Increasing Minimal Repair Costs at Failure.  
AD-A130 081

Asymptotic Methods in Reliability Theory: A Review.\*  
AD-A130 163

Reprint: Reliability Analysis of a Parallel System with Exponential Life Times and Phase Type Repairs.  
AD-A130 682

\*REPAIR  
IFR (Increasing Failure Rate) for Repairable Systems.\*  
AD-A129 553

\*REPLACEMENT  
Reprint: Periodic Replacement with Increasing Minimal Repair Costs at Failure.  
AD-A130 081

\*REPLACEMENT THEORY  
Multivariate Dependent Renewal Processes.\*  
AD-A128 818

\*REPORTS  
Research in Electronics: Joint Services Electronics Program.\*  
AD-A130 791

\*RESEARCH MANAGEMENT  
Research Studies on Radiative Collisional Processes.\*  
AD-A128 533

Analysis of the Howells-Applebaum Algorithm in the Presence of Moving Interference. The Use of Lattice Filters in Adaptive Array Processors. Stability Analysis of LMS Adaptive Filters. Adaptive Array Processors with Moving Interference.\*

AD-A130 218  
USAF/SCEEE Summer Faculty Research Program. Research Reports. Volume 1.\*  
AD-A130 769

USAF/SCEEE Summer Faculty Research Program (1982). Research Reports. Volume 2.\*  
AD-A130 770

Research in Electronics: Joint Services Electronics Program.\*  
AD-A130 791

\*RESISTANCE  
Reprint: Resistivity Anomalies and Phase Transitions in Alkali-Metal Graphite Intercalation Compounds.  
AD-A130 055

\*RESONATORS  
Phase Conjugate Optical Resonator.\*  
AD-A130 044

Reprint: Large-Signal Results for Degenerate Four-Wave Mixing and Phase Conjugate Resonators.  
AD-A131 311

\*RESPONSE  
Reprint: Plasma Response Functions, Fluctuation-Dissipation Relations and the Velocity-Average-Approximation.  
AD-A131 505

\*RIBONUCLEIC ACIDS  
Reprint: The Influence of Triiodothyronine on Polyadenosine-Diphosphoribose Polymerase and RNA Synthesis in Cardiac Nuclei.  
AD-A129 519

\*RIBOSE  
Reprint: Mitochondrial ADP-Ribosyltransferase System.  
AD-A128 669

Reprint: Decrease of Hepatic Mono and Oligo Adenosine Diphosphoribose Content and Augmentation of (14C) Ribose

SUBJECT INDEX-26  
UNCLASSIFIED EVN35A

REA-RIB

# UNCLASSIFIED

Incorporation during Induction of Growth by Bovine Growth Hormone in Hypophysectomized Rats.  
AD-A129 610  
Reprint: Age-Dependent Variation of Rates of Polyadenosine-Diphosphoribose Synthesis by Cardiac Nuclei and the Lack of Correlation of Enzymatic Activity with Macromolecular Size Distribution of DNA.  
AD-A129 647  
Reprint: Age Dependent Selective Effects of Hydrocortisone and Aldosterone on the Polyadenosine Diphosphoribose Metabolism of Isolated Cardiac Nuclei.  
AD-A129 686

\*ROBOTICS  
Reprint: Parallel Processing for Computer Vision.  
AD-A131 615

\*SAND  
Reprint: Influence of Fabric on Liquefaction and Densification Potential of Cohesionless Sand.  
AD-A130 949  
Fundamental Properties of Soils for Complex Dynamic Loadings: Dynamic Constitutive Modeling of Sandy Soils.\*  
AD-A131 284

\*SCALAR FUNCTIONS  
Scattering of Waves by Irregularities in Periodic Discrete Lattice Spaces. 2. Calculations.\*  
AD-A130 665

\*SCANNING  
Specific Heat of Octahydro - 1,3,5,7 - Tetranitro - 1,3,5,7 - Tetrazocine (HMX).\*  
AD-A128 442

\*SECONDARY  
Computation of Counting Distributions Arising from a Single-Stage Multiplicative Process.\*

AD-A131 480  
\*SEISMIC DATA  
Enhance and Test the Remote Seismic Terminal. Volume I.\*  
AD-A128 375  
The Use of Regional Seismic Waves for Discrimination and Yield Determination. Volume II.\*  
AD-A128 376

\*SEISMIC DETECTION  
Development of Automated Detection and Discrimination Techniques for Use at Regional to Teleseismic Distances.\*  
AD-A129 604

\*SEISMIC WAVES  
Attenuation of Seismic Waves at Regional Distances.\*  
AD-A128 396  
Regional Discrimination with Broadband Data.\*  
AD-A128 493  
Identification of Seismic Sources - Earthquake or Underground Explosion. Proceedings of the NATO Advanced Study Institute Held at Voksenasen, Oslo, Norway, September 8-18, 1980.\*  
AD-A129 441  
Development of Automated Detection and Discrimination Techniques for Use at Regional to Teleseismic Distances.\*  
AD-A129 604  
Reprint: Localized Velocity Anomalies in the Lower Mantle.  
AD-A129 617

\*SEISMOLOGICAL STATIONS  
Enhance and Test the Remote Seismic Terminal. Volume I.\*  
AD-A128 375  
The Use of Regional Seismic Waves for Discrimination and Yield Determination. Volume II.\*  
AD-A128 376

\*SELECTION

Applications of a Unified Theory of Monotonicity in Selection Problems.\*  
AD-A128 441

\*SEMANTICS  
Mapping between Semantic Representations Using Horn Clauses.\*  
AD-A131 531

\*SEMICONDUCTORS  
Measurement of High Mobilities and Strain Confinement of Long-Lived Free Excitations in CU2O.\*  
AD-A128 486  
Angular-Resolved Electron Emission Studies of Microwave Materials.\*  
AD-A129 205  
Reprint: Profiling the Implanted Region in Si Using Nondestructive Transverse Acoustoelectric Voltage versus Voltage Technique.  
AD-A129 289  
Reprint: Infrared Nonlinear Optics.  
AD-A129 993  
Non-Linear Optical Interactions in Semiconductors.\*  
AD-A129 995  
Reprint: Third-Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures.  
AD-A130 018  
Exciton-Laser Amplifier.\*  
AD-A130 036  
Study of Deep-Level Defects and Transport Properties vs Growth Parameters and Annealing Conditions in III-V Compound Semiconductors.\*  
AD-A130 776  
Semiconductor Surface Characterization Using Transverse Acoustoelectric Voltage versus Voltage Measurements.\*  
AD-A131 347

\*SEQUENCES(MATHEMATICS)  
Limit Laws for the Maximum of Weighted and Shifted I.I.D. Random

SUBJECT INDEX-27  
UNCLASSIFIED EVN35A

ROB-SEQ

# UNCLASSIFIED

- Variables.\*  
AD-A128 359  
On Limiting Distributions of  
Order Statistics with Variable  
Ranks from Stationary Sequences.\*  
AD-A128 484
- \*SEROTONIN  
Lung Metabolism, Function, and  
Morphology during Hyperoxic and  
Hyperbaric Exposure.\*  
AD-A129 661
- \*SET THEORY  
Pairwise Orthogonal F-Rectangle  
Designs.\*  
AD-A128 099
- \*SHAPE  
Adaptive Hybrid Picture Coding.\*  
AD-A129 221
- \*SIGNAL PROCESSING  
Optimal Constrained  
Representation and Filtering of  
Signals.\*  
AD-A129 157  
Interim Report for CY 1982.\*  
AD-A129 261  
Nonlinear Real-Time Optical  
Signal Processing.\*  
AD-A129 291  
Thin-Film Guided-Wave Devices  
for Integrated/Fiber Optic Signal  
Processing and Communications.\*  
AD-A129 582  
Robust Wiener Filtering for  
Multiple Inputs with Channel  
Distortion.\*  
AD-A129 648  
Reprint: Signal Processing in  
Evoked Potential Research:  
Applications of Filtering and  
Pattern Recognition.  
AD-A129 651  
Reprint: Robust Signal  
Processing for Communication  
Systems.  
AD-A129 761  
Analysis of the Howells-  
Applebaum Algorithm in the Presence
- of Moving Interference. The Use of  
Lattice Filters in Adaptive Array  
Processors. Stability Analysis of  
LMS Adaptive Filters. Adaptive  
Array Processors with Moving  
Interference.\*  
AD-A130 218  
Distributed Detection of Signal  
Waveforms in Additive Gaussian  
Observation Noise.\*  
AD-A131 016  
Sensor Correlation and Data  
Fusion Theory.  
AD-A131 510
- \*SIGNAL TO NOISE RATIO  
Distributed Detection of Signal  
Waveforms in Additive Gaussian  
Observation Noise.\*  
AD-A131 016
- \*SIGNALS  
Optimal Constrained  
Representation and Filtering of  
Signals.\*  
AD-A129 157  
Reprint: Preprocessing for  
Improved Classification of Evoked  
Potentials.  
AD-A129 645
- \*SILANES  
Reprint: Organosilicon Rotanes:  
Synthesis and an Unexpected  
Rearrangement.  
AD-A128 466
- \*SILICON  
Reprint: Profiling the Implanted  
Region in Si Using Nondestructive  
Transverse Acoustoelectric Voltage  
versus Voltage Technique.  
AD-A129 289
- \*SINGLE CRYSTALS  
Specific Heat of Octahydro -  
1,3,5,7 - Tetranitro - 1,3,5,7 -  
Tetrazocine (HMX).  
AD-A128 442  
Exciton-Laser Amplifier.\*  
AD-A130 036
- Coherent Scattering of Light  
Into High Frequency Radiowaves.\*  
AD-A130 691  
Deformation Studies in Workable  
Superalloys.\*  
AD-A131 606
- \*SINTERING  
Strengthening and Strength  
Uniformity of Structural Ceramics.\*  
AD-A129 570
- \*SKILLS  
Assessment and Development of  
Oculomotor Flying Skills by the  
Application of the Channel Theory  
of Vision.\*  
AD-A129 534
- \*SLEEP  
Effects of Exhaustive Exercise  
on the Sleep of Men and Women.  
AD-A129 670
- \*SLURRY FUELS  
Reprint: Breakup and Droplet  
Formation of Slurry Jets.  
AD-A130 699
- \*SNOW  
An Investigation Into the Nature  
of Snowflake Aggregation in the  
Vicinity of the Melting Layer in  
Stratiform Clouds.\*  
AD-A129 343
- \*SODIUM  
Reprint: Zeeman Transitions in  
Collisions of Na with Xe.  
AD-A129 220
- \*SOIL MECHANICS  
Fundamental Properties of Soils  
for Complex Dynamic Loadings:  
Dynamic Constitutive Modeling of  
Sandy Soils.\*  
AD-A131 284  
Effects of Rigid Inclusions on  
Wave Propagation.\*  
AD-A131 366  
In Situ Characterization of

SUBJECT INDEX-28  
UNCLASSIFIED EVN35A

SER-SOI

# UNCLASSIFIED

Saturated Sands and Silts for the Prediction of Dynamic Shear Modulus and Shear Wave Velocity.\*  
AD A131 376

## \*SOIL MODELS

Reprint: Inherent Anisotropy and Shear Strength of Assembly of Oval Cross-Sectional Rods.  
AD-A131 616

## \*SOLID SOLUTIONS

Properties of Mercury Cadmium-Telluride Solid Solutions.\*  
AD-A130 224

## \*SOLIDS

The Interaction of Electromagnetic Radiation with Solid Materials.\*  
AD-A130 727

## \*SONIC BOOM

Note on the Axisymmetric Sonic Jet.\*  
AD-A129 211

## \*SOUND WAVES

Reprint: Organic Sonochemistry. Sonic Acceleration of the Reformatsky Reaction.  
AD A128 481

## \*SPACE CHARGE

Numerical Simulation of Spacecraft Charging Phenomena at High Altitude.\*  
AD-A130 043

## \*SPACECRAFT

Reprint: Conjectures on the Origin of the Surface Glow of Space Vehicles.  
AD-A128 637

## \*SPACECRAFT COMPONENTS

Numerical Simulation of Spacecraft Charging Phenomena at High Altitude.\*  
AD-A130 043

## \*SPARE PARTS

Parts and Service Demand Distribution Generated by Primary Production.\*  
AD-A131 497

## \*SPARK GAPS

Coordinated Research Program in Pulsed Power Physics.\*  
AD-A129 554

## \*SPARSE MATRIX

A Structurally Stable Modification of Hellerman-Rarick's P4 Algorithm for Reordering Unsymmetric Sparse Matrices.\*  
AD-A129 344

## \*SPATIAL DISTRIBUTION

Reprint: Spatial and Temporal Studies of a Glow Discharge.  
AD-A128 461

## \*SPATIAL FILTERING

Optical Waveguide Spatial Filters.\*  
AD-A129 746

## \*SPECIFIC HEAT

Specific Heat of Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine (HMX).\*  
AD-A128 442

Reprint: Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K)HgC<sub>8</sub> and (Rb,K)HgC<sub>8</sub>.  
AD-A130 857

The Specific Heat, 0.4K to 80K, of C<sub>8</sub>K, C<sub>8</sub>Cs, C<sub>8</sub>Rb and Their Parent HOPG (Highly Oriented Pyrolytic Graphite).  
AD-A131 361

Reprint: Low-Temperature Specific Heat of the Graphite Intercalation Compounds KC<sub>8</sub>, CsC<sub>8</sub>, RbC<sub>8</sub>, and Their Parent Highly Oriented Pyrolytic Graphite.  
AD-A131 362

## \*SPECIFICATIONS

Event-Based Specification and Verification of Distributed Systems.\*  
AD-A128 629

Design of a System That Understands Informal Specifications.\*  
AD-A131 479

## \*SPECTRA

Reprint: Spectral Analysis of the Conformation of Polyadenosine Diphosphoribose: Evidence Indicating Secondary Structure.  
AD-A129 612

## \*SPECTRAL EMISSION

Reprint: Versatile, High Resolution Continuum Source Atomic Absorption Flame Spectrometer with Resonance Flame Detector.  
AD-A128 538

## \*SPECTROMETERS

Reprint: Versatile, High Resolution Continuum Source Atomic Absorption Flame Spectrometer with Resonance Flame Detector.  
AD-A128 538

## \*SPECTROSCOPY

Non-Linear Optical Interactions in Semiconductors.\*  
AD-A129 995

## \*SPECTRUM ANALYSIS

Reprint: Spectral Analysis: Prediction and Extrapolation.  
AD-A129 218

## \*SPHERES

Reprint: A Statistical Study of Fabric in a Random Assembly of Spherical Granules.  
AD-A130 742

## \*SPINAL COLUMN

Analysis of Long Bone and Vertebral Failure Patterns.\*  
AD-A129 233

Cervical Spline Analysis for

SUBJECT INDEX-29  
UNCLASSIFIED EVN35A

501-SPI

# UNCLASSIFIED

Ejection Injury Prediction.\*  
AD-A131 081

\*STABILITY  
Stability in Linear Delay  
Equations.\*  
AD-A129 264

\*STARS  
Reprint: USVRI Photometric  
Standard Stars around the Celestial  
Equator  
AD-A130 223

\*STATISTICAL ANALYSIS  
Final Report on AFOSR-81-0042.\*  
AD-A130 101  
Reprint: A Statistical Study of  
Fabric in a Random Assembly of  
Spherical Granules.  
AD-A130 742  
Approaches to Automatic Strategy  
Analysis and Synthesis.\*  
AD-A130 805

\*STATISTICAL INFERENCE  
Reprints: The Family of t-  
Designs, Part II.  
AD-A129 217

\*STATISTICAL MECHANICS  
Studies in Non-Equilibrium  
Statistical Mechanics.\*  
AD-A129 338

\*STATISTICAL PROCESSES  
An Iterated Logarithm Law Result  
for Extreme Values from Gaussian  
Sequences.\*  
AD-A129 559  
Robust Prediction and  
Interpolation for Vector Stationary  
Processes.\*  
AD-A130 973

\*STATISTICS  
Reprint: The Occupational  
Statistics for Indistinguishable  
Trimmers on a 3XN Lattice Space.  
AD-A129 219  
Exciton-Laser Amplifier.\*

AD-A130 036

\*STOCHASTIC CONTROL  
Optimal Control of Markov  
Processes.\*  
AD-A129 296

\*STOCHASTIC PROCESSES  
Central Limit Theory for  
Martingales via Random Change of  
Time.\*  
AD-A128 439  
Testing Whether New is Better  
than Used of a Specified Age.\*  
AD-A128 443  
Asymptotic Behavior of  
Stochastic Approximation and Large  
Deviations.\*  
AD-A123 209  
An Iterated Logarithm Law Result  
for Extreme Values from Gaussian  
Sequences.\*  
AD-A129 559  
Analysis of a Delayed Delta  
Modulator.\*  
AD-A131 203

\*STRATEGY  
Approaches to Automatic Strategy  
Analysis and Synthesis.\*  
AD-A130 805  
Reprint: On a Computer-Based  
Theory of Strategies.  
AD-A131 351

\*STRENGTH(MECHANICS)  
Strengthening and Strength  
Uniformity of Structural Ceramics.\*  
AD-A129 570

\*STRESS WAVES  
Effects of Rigid Inclusions on  
Wave Propagation.\*  
AD-A131 366

\*STRESS(PHYSIOLOGY)  
Reprint: Cardiovascular  
Regulation in Canines during Low-  
Frequency Acceleration.  
AD-A129 537

\*STRUCTURAL GEOLOGY  
Lateral Variations in Geologic  
Structure and Tectonic Setting from  
Remote Sensing Data.\*  
AD-A130 758

\*STRUCTURAL PROPERTIES  
Structural and Kinetic  
Properties of Graphite  
Intercalation Compounds.\*  
AD-A129 579

\*STUDENTS  
USAF/SCEE Graduate Student  
Summer Support Program (1982).  
Management and Technical Report.\*  
AD-A130 767  
USAF/SCEE Summer Faculty  
Research Program (1982). Management  
Report.\*  
AD-A130 763

\*SUBROUTINES  
Reprint: Prime Program  
Decomposition.  
AD-A129 132

\*SUBSONIC FLOW  
Wind Tunnel Wall Interference.\*  
AD-A131 596

\*SULFUR COMPOUNDS  
Reprint: Ground States of  
Molecules. 56. MNDO Calculations  
for Molecules Containing Sulfur.  
AD-A129 131

\*SUPERALLOYS  
Dip Process Thermal-Barrier  
Coatings for Superalloys.\*  
AD-A129 292  
Deformation Studies in Workable  
Superalloys.\*  
AD-A131 606

\*SUPERCONDUCTIVITY  
Reprint: Superconductivity of  
the Graphite Intercalation  
Compounds KHgC8 and RbHgC8:  
Evidence from Specific Heat.  
AD-A129 759

SUBJECT INDEX-30  
UNCLASSIFIED EVN35A

STA-SUP

# UNCLASSIFIED

Reprint: Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K) HgC<sub>8</sub> and (Rb,K) HgC<sub>8</sub>.  
AD-A130 857

## \*SUPERCONDUCTORS

Transient Heat Transfer in Coated Superconductors.\*  
AD-A129 600  
Metallurgical Characterization of Niobium/Tin Superconducting Multifilamentary Wires.\*  
AD-A131 018

\*SUPERSONIC FLOW  
Wind Tunnel Wall Interference.\*  
AD-A131 396

\*SURFACE ACOUSTIC WAVE DEVICES  
Optical Waveguide Spatial Filters.\*  
AD-A129 746

Semiconductor Surface Characterization Using Transverse Acoustoelectric Voltage versus Voltage Measurements.\*  
AD A131 347

## \*SURFACE CHEMISTRY

Reprint: Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.  
AD-A128 446  
Reprint: Azimuthal Dependence of Impact Scattering in Electron Energy Loss Spectroscopy.  
AD-A128 476

Angular-Resolved Electron Emission Studies of Microwave Materials.\*  
AD-A129 205

Reprint: Surface Termination i. Chain Reactions and the Interaction with Homogeneous Termination.  
AD-A130 715

## \*SURFACE PROPERTIES

Reprint: Conjectures on the Origin of the Surface Glow of Space

Vehicles.

AD-A128 637

Semiconductor Surface Characterization Using Transverse Acoustoelectric Voltage versus Voltage Measurements.\*

AD-A131 347

Investigation of the Rayleigh Critical Angle Phenomenon for the Characterization of Surface Properties.\*  
AD A131 520

## \*SURFACE ROUGHNESS

The Interaction of Electromagnetic Radiation with Solid Materials.\*  
AD-A130 727

## \*SWITCHING CIRCUITS

Coordinated Research Program in Pulsed Power Physics.\*  
AD A129 554

## \*SYMBOLS

Reprint: Preprocessing for Improved Classification of Evoked Potentials.  
AD-A129 645

## \*SYMPOSIA

1982 Gordon Research Conference on Holography and Optical Information Processing.\*  
AD-A129 137  
Microwaves and Thermoregulation: A Symposium.\*  
AD-A129 660

## \*SYNTHESIS

Reprint: Cell Specific Response of Cardiac Poly ADP-R and DNA Synthesis to Circulatory Stress.  
AD-A129 575

## \*SYNTHESIS(CHEMISTRY)

Reprint: New Syntheses of Pentafluorotellurium Hypochlorite.  
AD-A128 427

Reprint: Synthesis and Characterization of Tungsten-

Cobalt, -Rhodium, and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-CCl<sub>4</sub>H<sub>4</sub>Me-4)(CO)2(PMe<sub>3</sub>)(eta<sup>5</sup>-C<sub>5</sub>H<sub>5</sub>)(eta<sup>5</sup>-C<sub>9</sub>H<sub>7</sub>) and PtW(mu-C(C<sub>6</sub>H<sub>4</sub>Me-4)(C(O)(col(pme<sub>3</sub>)(eta<sup>4</sup>-C<sub>8</sub>H<sub>12</sub>)(eta<sup>5</sup>-C<sub>5</sub>H<sub>5</sub>)).  
AD A128 465

Reprint: Organosilicon Rotanes: Synthesis and an Unexpected Rearrangement.  
AD-A128 466

Reprint: A Synthetic Route to Heteronuclear Clusters Containing Iridium and Rhodium: X-Ray Crystal Structures of (IrOs<sub>3</sub>(u-H)<sub>2</sub>(u-C1)(CO)<sub>12</sub>) and (Ir<sub>2</sub>Rh<sub>2</sub>(u-CO)(u<sub>3</sub>-CO)<sub>2</sub>(CO)<sub>4</sub>(r-C<sub>5</sub>Me<sub>5</sub>)<sub>2</sub>).  
AD A128 520

## \*SYNTHETIC APERTURE SONAR

Reprint: Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images.  
AD-A130 062

## \*SYSTEMS ENGINEERING

Reprint: Estimation under Reliability Growth Assuming Gamma Failure Models.  
AD-A130 063

## \*TABLES(DATA)

Transport Properties of Selected Elements and Compounds in the Gaseous State. Part 2.\*  
AD-A129 060

## \*TARGET RECOGNITION

A Study of Texture Analysis Algorithms.\*  
AD-A131 498

## \*TECHNOLOGY FORECASTING

Artificial Intelligence Implications for Information Retrieval.\*  
AD-A131 382

## \*TECTONICS

Reprint: Evidence of Tectonic Release from Underground Nuclear

SUBJECT INDEX-31

UNCLASSIFIED EVN35A

SUP-TEC

# UNCLASSIFIED

Explosions in Long Period P Waves.  
AD-A129 290  
Lateral Variations in Geologic  
Structure and Tectonic Setting from  
Remote Sensing Data.\*  
AD-A130 758

\*TELLURIDES  
Properties of Mercury-Cadmium-  
Telluride Solid Solutions.\*  
AD-A130 224

\*TELLURIUM COMPOUNDS  
Reprint: New Syntheses of  
Pentafluorotellurium Hypochlorite.  
AD-A128 427

\*TEMPERATURE CONTROL  
Microwaves and Thermoregulation:  
A Symposium.\*  
AD-A129 660

\*TERRAIN AVOIDANCE  
Efficient Computation for Large  
Scale Optimization.\*  
AD-A129 293

\*TERRAIN FOLLOWING  
Efficient Computation for Large  
Scale Optimization.\*  
AD-A129 293

\*TERRAIN MODELS  
Efficient Computation for Large  
Scale Optimization.\*  
AD-A129 293

\*TEST METHODS  
Reprint: Robust Hypothesis  
Testing and Robust Time Series  
Interpolation and Regression.  
AD-A129 544

\*TEXTURE  
A Study of Texture Analysis  
Algorithms.\*  
AD-A130 034  
A Study of Texture Analysis  
Algorithms.\*  
AD-A131 498

\*THEORY  
Final Report on AFOSR-81-0042.\*  
AD-A130 101  
Reprint: Atomic Inner-Shell  
Transitions---Theory and the Need  
for Experiments.  
AD-A130 748  
New Method in Elementary  
Particle Detection.\*  
AD-A131 238  
Reprint: On a Computer-Based  
Theory of Strategies.  
AD-A131 351

\*THERMAL CONDUCTIVITY  
Metallurgical Characterization  
of Niobium/Tin Superconducting  
Multifilamentary Wires.\*  
AD-A131 018

\*THERMAL INSULATION  
Dip Process Thermal-Barrier  
Coatings for Superalloys.\*  
AD-A129 292

\*THERMAL PROPERTIES  
Transport Properties of Selected  
Elements and Compounds in the  
Gaseous State. Part 2.\*  
AD-A129 060  
Thermal and Physical Properties  
of Graphite Intercalation  
Compounds.\*  
AD-A129 677

\*THERMODYNAMIC PROPERTIES  
Properties of Mercury-Cadmium-  
Telluride Solid Solutions.\*  
AD-A130 224

\*THERMOPHYSICAL PROPERTIES  
Transport Properties of Selected  
Elements and Compounds in the  
Gaseous State. Part 2.\*  
AD-A129 060  
Thermophysical Property  
Determinations Using Transient  
Techniques.\*  
AD-A130 707

\*THIN FILMS

Thin-Film Guided-Wave Devices  
for Integrated/Fiber Optic Signal  
Processing and Communications.\*  
AD-A129 582

\*THUNDERSTORMS  
Analysis and Prediction of  
Severe Storm Environment.\*  
AD-A129 247

\*TIME SERIES ANALYSIS  
Reprint: Robust Hypothesis  
Testing and Robust Time Series  
Interpolation and Regression.  
AD-A129 544  
Robust Linear Filtering for  
Multivariable Stationary Time  
Series.\*  
AD-A131 209

\*TITANIUM  
High Resolution Electron Energy  
Loss Studies of Chemisorbed Species  
on Aluminum and Titanium.\*  
AD-A129 204

\*TOXICITY  
Sublethal Effects of JP-4 on  
Lepomis macrochirus.\*  
AD-A128 618  
Lung Metabolism, Function, and  
Morphology during Hyperoxic and  
Hyperbaric Exposure.\*  
AD-A129 661

\*TRANSFERASES  
Reprint: Mitochondrial ADP-  
Ribosyltransferase System.  
AD-A128 669

\*TRANSFORMATIONS(MATHEMATICS)  
Reprint: Prediction and Power  
Transformations When the Choice of  
Power is Restricted to a Finite  
Set.  
AD-A129 163

\*TRANSIENTS  
Transient Heat Transfer in  
Coated Superconductors.\*  
AD-A129 600

SUBJECT INDEX-32  
UNCLASSIFIED EVN35A

TEL-TRA



# UNCLASSIFIED

Thermophysical Property  
Determinations Using Transient  
Techniques.\*  
AD-A130 707

## \*TRANSITION METALS

Angular-Resolved Electron  
Emission Studies of Microwave  
Materials.\*  
AD-A129 205

Correlation and Collective Modes  
in Narrow Band Materials.\*  
AD-A131 516

## \*TRANSLATIONS

Reprint: Atomic Inner-Shell  
Transitions---Theory and the Need  
for Experiments.  
AD-A130 748

## \*TRANSONIC FLOW

Research on Topics in Transonic  
Flow Theory and Adaptive Grid  
Generation.\*  
AD-A128 485

Note on the Axisymmetric Sonic  
Jet.\*

AD-A129 211

Unsteady Transonic Flow in a Two-  
Dimensional Diffuser:  
Interpretation of Experimental  
Results.\*  
AD A129 406

## \*TRIANGULATION

Characterizing Dominates on a  
Family of Triangular Norms.\*  
AD-A128 482

## \*TRITIUM

Reprint: Tritium Migration in  
Tritiated Anisole.  
AD-A128 454

## \*TROPOPAUSE

Reprint: Comparison of  
Tropopause Height and Frontal  
Boundary Locations Based on Radar  
and Radiosonde Data.  
AD-A128 467

## \*TRYPTOPHAN

Lung Metabolism, Function, and  
Morphology during Hyperoxic and  
Hyperbaric Exposure.\*  
AD-A129 661

## \*TUNABLE LASERS

Alkali-Rare Gas and Metal-Halide  
Molecules as Potential Tunable and  
Efficient Lasers in the Visible.\*  
AD-A128 534

Non-Linear Optical Interactions  
in Semiconductors.\*  
AD-A129 995

## \*TURBULENT FLOW

Chemically Reacting Turbulent  
Shear Layers.\*  
AD-A131 553

## \*TWO DIMENSIONAL

Moving Finite Elements in 2-D.\*  
AD-A131 279

## \*TWO DIMENSIONAL FLOW

Unsteady Transonic Flow in a Two-  
Dimensional Diffuser:  
Interpretation of Experimental  
Results.\*  
AD-A129 406

## \*ULTRASONIC TESTS

Reprint: Profiling the Implanted  
Region in Si Using Nondestructive  
Transverse Acoustoelectric Voltage  
versus Voltage Technique.  
AD-A129 289

## \*ULTRASONICS

Reprint: Quantitative Evaluation  
of Real-Time Synthetic Aperture  
Acoustic Images.  
AD-A130 062

## \*ULTRAVIOLET LASERS

Exciton-Laser Amplifier.\*  
AD-A130 036

## \*UNDERGROUND EXPLOSIONS

Regional Discrimination with  
Broadband Data.\*

AD-A128 493

Reprint: Evidence of Tectonic  
Release from Underground Nuclear  
Explosions in Long-Period P Waves.  
AD-A129 290

## \*UNSTEADY FLOW

Unsteady Swirling Flows in Gas  
Turbines.\*  
AD-A128 386

## \*VACUUM ULTRAVIOLET RADIATION

Coherent Propagation and Sum  
Frequency Generation into the  
Vacuum Ultraviolet.\*  
AD-A130 729

## \*VARIABLES

A Note on the Functional  
Estimation of Values of Hidden  
Variables --- An Extended Module  
for Expert Systems.\*  
AD-A130 749

## \*VECTOR ANALYSIS

Reprint: Spherical-Harmonic  
Expansion Techniques for  
Multicenter Integrals over STO's  
(Slater-Type Orbitals). A Re-  
Examination for Vector Processing  
Computers.  
AD-A128 429

## \*VIBRATIONAL SPECTRA

Reprint: Electric Dipole Moments  
of Excited Vibrational Levels in  
the X1A1 State of Formaldehyde by  
Stimulated Emission Spectroscopy.  
AD-A129 147

## \*VISION

Eye Movements and Visual  
Information Processing.\*  
AD-A129 225

Assessment and Development of  
Oculomotor Firing Skills by the  
Application of the Channel Theory  
of Vision.\*  
AD-A129 534

## \*VISUAL CORTEX

SUBJECT INDEX-33  
UNCLASSIFIED EVN35A

TRA-VIS

# UNCLASSIFIED

Reciprocal Neural Pathways and  
Associative Networks.\*  
AD-A129 480

\*VISUAL PERCEPTION  
Reprint: Parallel Processing for  
Computer Vision.  
AD-A131 G15

\*VOLTAGE  
Reprint: Preprocessing for  
Improved Classification of Evoked  
Potentials.  
AD-A129 645

\*WAKE  
Stability of Compressible Wake  
and Jet Flows.\*  
AD-A128 414

\*WALLS  
Wind Tunnel Wall Interference.\*  
AD-A131 396

\*WAVE PROPAGATION  
Coherent Propagation and Sum  
Frequency Generation into the  
Vacuum Ultraviolet.\*  
AD-A130 729

Effects of Rigid Inclusions on  
Wave Propagation.\*  
AD-A131 366

\*WAVEFORMS  
Distributed Detection of Signal  
Waveforms in Additive Gaussian  
Observation Noise.\*  
AD-A131 016

Sensor Correlation and Data  
Fusion Theory.\*  
AD-A131 510

\*WAVEGUIDES  
Thin-Film Guided-Wave Devices  
for Integrated/Fiber Optic Signal  
Processing and Communications.\*  
AD-A129 582

\*WEAK CONVERGENCE  
Weak Convergence and Asymptotic  
Properties of Adaptive Filters with

Constant Gains.\*  
AD-A129 214

\*WEIGHTING FUNCTIONS  
Limit Laws for the Maximum of  
Weighted and Shifted I.I.D. Random  
Variables.\*  
AD-A128 359

\*WHITE LIGHT  
White-Light Optical Information  
Processing and Holography.\*  
AD-A129 682

\*WHITE NOISE  
A Finely Additive White Noise  
Approach to Nonlinear Filtering.\*  
AD-A129 224

\*WIND TUNNELS  
Wind Tunnel Wall Interference.\*  
AD-A131 396

\*WIRE  
Metallurgical Characterization  
of Niobium/Tin Superconducting  
Multifilamentary Wires.\*  
AD-A131 018

\*WOMEN  
Effects of Exhaustive Exercise  
on the Sleep of Men and Women.  
AD-A129 670

\*WOUNDS AND INJURIES  
Cervical Spine Analysis for  
Ejection Injury Prediction.\*  
AD-A131 081

\*X RAY DIFFRACTION  
Reprint: A Synthetic Route to  
Heteronuclear Clusters Containing  
Iridium and Rhodium: X-Ray Crystal  
Structures of  $(\text{IrOs}_3(\text{u-H})_2(\text{u-C1})(\text{CO})_{12})$  and  $(\text{Ir}_2\text{Rh}_2(\text{u-CO})(\text{u3-CO})_2(\text{CO})_4(\text{n-C5Me5})_2)$ .  
AD-A128 520

\*X RAY SPECTROSCOPY  
Reprint: Synthesis and  
Characterization of Tungsten-

Cobalt, -Rhodium, and -Platinum  
Compounds and the X-Ray Crystal  
Structures of  $\text{RhW}(\mu\text{-CCl}_3\text{H}_4\text{Me-4})(\text{CO})_2(\text{PMe}_3)(\text{eta5-C5H}_5)(\text{eta5-C9H}_7)$   
and  $\text{PtW}(\mu\text{-C}(\text{C}_6\text{H}_4\text{Me-4})\text{C}(\text{O})(\text{co})(\text{pme}_3)(\text{eta4-C8H}_{12})(\text{eta5-C5H}_5)$ .  
AD-A128 465

\*XENON  
Reprint: Zeeman Transitions in  
Collisions of Na with Xe.  
AD-A129 220

SUBJECT INDEX-34  
UNCLASSIFIED EVN35A

VIS-XEN

**PERSONAL AUTHOR INDEX**

# UNCLASSIFIED

## PERSONAL AUTHOR INDEX

- \*ADAIR, ELEANOR R. \* \* \*  
Microwaves and Thermoregulation: A Symposium.  
AD-A129 660
- \*AGGARWAL, ROSHAN L. \* \* \*  
Infrared Nonlinear Optics.  
AD-A129 993
- \*ALEXANDER, M. GRAYSON \* \* \*  
Superconductivity of the Graphite Intercalation Compounds KHgC<sub>8</sub> and RbHgC<sub>8</sub>: Evidence from Specific Heat.  
AD-A129 759
- \* \* \*  
Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K) HgC<sub>4</sub> and (Rb,K) HgC<sub>8</sub>.  
AD-A130 857
- \* \* \*  
The Specific Heat, 0.4K to 90K, of C<sub>8</sub>CS, C<sub>8</sub>Rb and Their Parent HOPG (highly Oriented Pyrolytic Graphite).  
AD-A131 361
- \* \* \*  
Low-Temperature Specific Heat of the Graphite Intercalation Compounds KC<sub>8</sub>, CsC<sub>8</sub>, RbC<sub>8</sub>, and Their Parent Highly Oriented Pyrolytic Graphite.  
AD-A131 362
- \* \* \*  
Heat Capacity and Magnetic Studies of Graphite Intercalated with FeCl<sub>3</sub> and NiCl<sub>2</sub>(+2).  
AD-A131 390
- \*ALEXANDER, SHELTON S. \* \* \*  
Lateral Variations in Geologic Structure and Tectonic Setting from Remote Sensing Data.  
AD-A130 758
- \*ALLAM, IBRAHIM M. \* \* \*  
Preprocessing for Improved Classification of Evoked Potentials.  
AD-A129 645
- \* \* \*  
Signal Processing in Evoked Potential Research: Applications of Filtering and Pattern Recognition.  
AD-A129 651
- \*BACON, J. ROGER \* \* \*  
Phase-Plane and Guggenheim Methods for Treatment of Kinetic Data.  
AD-A129 207
- \*BAER, R. \* \* \*  
Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images.  
AD-A130 062
- \*BAGANOFF, D. \* \* \*  
On the Structure of an Underexpanded Rectangular Jet.  
AD-A129 227
- \*BALDWIN, RAY R. \* \* \*  
Surface Termination in Chain Reaction and the Interaction with Homogeneous Termination.  
AD-A130 715
- \*BALDWIN, ROBERT R. \* \* \*  
Arrhenius Parameters of Elementary Reactions Involved in the Oxidation of Neopentane.  
AD-A129 192
- \*BALDWIN, ROY R. \* \* \*  
The Decomposition of 2,2,3,3-Tetramethylbutane in KCl- and B2O3-Coated Vessels in the Presence of Oxygen.  
AD-A130 683
- \*ANDERSON, S. L. \* \* \*  
Multiphoton Ionization Photoelectron Spectroscopy: A New Method for Determining Vibrational Structure of Molecular Ions.  
AD-A128 448
- \*ANGELL, T. S. \* \* \*  
The Three Dimensional Inverse Scattering Problem for Acoustic Waves.  
AD-A128 450
- \*ARULANANDAN, K. \* \* \*  
In Situ Characterization of Saturated Sands and Silts for the Prediction of Dynamic Shear Modulus and Shear Wave Velocity.  
AD-A131 376
- \*ARULMOLI, K. \* \* \*  
In Situ Characterization of Saturated Sands and Silts for the Prediction of Dynamic Shear Modulus and Shear Wave Velocity.  
AD-A131 376
- \*AUNON, JORGE I. \* \* \*  
Spectral Analysis: Prediction and Extrapolation.  
AD-A129 218
- \* \* \*  
Effects of Ongoing EEG on Latency Measurements of Evoked Potentials.  
AD-A129 520
- \* \* \*  
Comparison of Linear and Quadratic Classification of Event-Related Potentials on the Basis of Their Exogenous or Endogenous Components.  
AD-A129 522

# UNCLASSIFIED

*BARKER, T. G. * * *	Semiclassical Theory of Collisional Ionization. AD-A130 054	Interpretation of Experimental Results. AD-A129 406
Simulation of Ground Motions from the 1971 San Fernando Earthquake and an Aftershock of the 1975 Oroville Earthquake. AD-A131 206	*BHAUMIK, D. * * *	*BOLAND, A. J. * * *
*BARTLETT, RODNEY J. * * *	Theoretical Studies of Relatively Rigid Polymer Chains. AD-A128 421	Investigation of the Rayleigh Critical Angle Phenomenon for the Characterization of Surface Properties. AD-A131 530
Molecular Interactions with Many-Body Methods. AD-A130 040	*BIERBAUM, VERONICA M. * * *	*BOLAND, PHILIP J. * * *
*BENNETT, S. D. * * *	Infrared Chemiluminescence Studies of Ion-Molecule Reactions in a Flowing Afterglow. AD-A130 138	Periodic Replacement with Increasing Minimal Repair Costs at Failure. AD-A130 081
Focused Acoustic Beams for Accurate Phase Measurements. AD-A130 033	*BLACKBURN, M. B. * * *	*BOLEY, W. * * *
Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images. AD-A130 062	Versatile, High Resolution Continuum Source Atomic Absorption Flame Spectrometer with Resonance Flame Detector. AD-A128 538	Nuclear Moment Alignment, Relaxation and Detection Mechanisms. AD-A131 546
*BENZIGER, JAY * * *	*BLAISDELL, R. J. * * *	*BOSE, N. K. * * *
A Mechanistic Study of Nitromethane Decomposition on Ni Catalysts. AD-A128 444	ADP-ribosylation of Nonhistone Chromatin Proteins in Vivo and of Actin in Vitro and Effects of Normal and Abnormal Growth Conditions and Organ-Specific Hormonal Influences. AD-A129 703	Approximation Methods in Multidimensional Filter Design and Related Problems Encountered in Multidimensional System Design. AD-A131 316
*BERGER, ROGER L. * * *	*BLISS, D. B. * * *	*BOUDJOUK, PHILIP * * *
Applications of a Unified Theory of Monotonicity in Selection Problems. AD-A128 441	Wind Tunnel Wall Interference. AD-A131 396	Organic Sonochemistry. Sonic Acceleration of the Reformatsky Reaction. AD-A128 481
*BERNSTEIN, ARTHUR * * *	*BLOOMBERG, HOWARD W. * * *	*BOWLING, CARL D. * * *
Proving Real-Time Properties of Programs with Temporal Logic. AD-A129 013	Effects of Atmospheric Inhomogeneity on Long Range Ion Beam Propagation. AD-A128 492	Adaptive Hybrid Picture Coding. AD-A129 221
*BEVIER, WENDY * * *	*BOGAR, THOMAS J. * * *	*BRAMMER, J. D. * * *
Effects of Exhaustive Exercise on the Sleep of Men and Women. AD-A129 670	Unsteady Transonic Flow in a Two-Dimensional Diffuser.	Identification and Quantification of the Water Soluble Components of JP-4 and a Determination of Their
*BHATTACHARYYA, DILIP K. * * *		

PERSONAL AUTHOR INDEX-2  
UNCLASSIFIED EVN35A

BAR-BRA

# UNCLASSIFIED

Biological Effects upon Selected  
Freshwater Organisms.  
AD-A129 526

\*BRATTON, JIMMIE L. \* \* \*

Fundamental Properties of Soils for  
Complex Dynamic Loadings: Dynamic  
Constitutive Modeling of Sandy  
Soils.  
AD-A131 284

\*BRAUNSTEIN, RUBIN \* \* \*

Characterization of Infrared  
Optical Properties of Transparent  
Materials.  
AD-A131 554

\*BREBRICK, ROBERT F. \* \* \*

Properties of Mercury-Cadmium-  
Telluride Solid Solutions.  
AD-A130 224

\*BROADWELL, J. E. \* \* \*

Chemically Reacting Turbulent Shear  
Layers.  
AD-A131 553

\*BROWN, DAVID C. \* \* \*

An Approach to Expert Systems for  
Mechanical Design.  
AD-A131 340

\*BROWN, F. \* \* \*

Infrared Nonlinear Optics,  
AD-A129 993

\*BROWN, MARILYN J. \* \* \*

A Modification for Preparing the  
Chronic Lung-Lymph Fistula in  
Sheep.  
AD-A129 518

\*BROWN, MARK \* \* \*

On the Reliability of Repairable  
Systems.  
AD-A130 037

\*BROWN, THOMAS C. \* \* \*

Research on Synthesis of Concurrent  
Computing Systems.  
AD-A130 048

\*BRUCKENSTEIN, STANLEY \* \* \*

Fundamental Studies of  
Underpotential Metal Deposition and  
Trace Analysis Using Solid  
Electrodes.  
AD-A130 099

\*BRUNO, C. \* \* \*

Catalytic Combustion for Advanced  
Jet Engines.  
AD-B075 283L

\*BUIKEMA, ARTHUR L., JR \* \* \*

Sublethal Effects of JP-4 on  
Lepomis macrochirus.  
AD-A128 618

\*BUNNELL, DAVID E. \* \* \*

Effects of Exhaustive Exercise on  
the Sleep of Men and Women,  
AD-A129 670

\*BUZMAN, J. \* \* \*

Configurational Characteristics of  
the Polysulfides. 3. Dipole Moments  
of Poly(trimethylene sulfide) and  
Comparisons between some  
Polysulfides and the Corresponding  
Polyoxides,  
AD-A128 159

\*BYLANDER, TOM \* \* \*

CSRL (Conceptual Structures  
Representation Language): A  
Language for Expert Systems

Diagnosis.  
AD-A131 403

\*CAIRNS, JOHN, JR \* \* \*

Sublethal Effects of JP-4 on  
Lepomis macrochirus.  
AD-A128 618

\*CAMBANIS, STAMATIS \* \* \*

Analysis of a Delayed Delta  
Modulator.  
AD-A131 208

\*CAO, QIZHI \* \* \*

Optical Computing Research.  
AD-A129 166

\*CARLSON, COREY W. \* \* \*

Organosilicon Rotanes. Synthesis  
and an Unexpected Rearrangement.  
AD-A128 468

\*CARLSON, TOBY N. \* \* \*

Analysis and Prediction of Severe  
Storm Environment.  
AD-A129 247

\*CARROLL, R. J. \* \* \*

A Comparison between Maximum  
Likelihood and Generalized Least  
Squares in a Heteroscedastic Linear  
Model.  
AD-A129 162

\*CARROLL, RAYMOND J. \* \* \*

Prediction and Power  
Transformations When the Choice of  
Power is Restricted to a Finite  
Set.  
AD-A129 163

\*CARTER, JERRY A. \* \* \*

Enhance and Test the Remote Seismic

PERSONAL AUTHOR INDEX-3  
UNCLASSIFIED EVN35A

BRA-CAR

# UNCLASSIFIED

Terminal. Volume I.  
AD-A128 375

\* \* \*  
The Use of Regional Seismic Waves  
for Discrimination and Yield  
Determination. Volume II.  
AD-A128 376

\*CASASANT, DAVID \* \* \*  
Optical Pattern Recognition for  
Missile Guidance.  
AD-A130 097

\*CHAGANTY, N. R. \* \* \*  
IFR (Increasing Failure Rate) for  
Repairable Systems.  
AD-A129 553

\*CHAI, YOUNG G. \* \* \*  
Electrical and Optical Properties  
of InP Grown by Molecular Beam  
Epitaxy Using Cracked Phosphine.  
AD-A131 264

\*CHAKRAVARTY, S. \* \* \*  
Reliability Analysis of a Parallel  
System with Exponential Life Times  
and Phase Type Repairs.  
AD-A130 682

\*CHANDRASEKARAN, B. \* \* \*  
An Approach to Expert Systems for  
Mechanical Design.  
AD-A131 340

\* \* \*  
Expert Systems: Matching Techniques  
to Tasks.  
AD-A131 385

\* \* \*  
CSRL (Conceptual Structures  
Representation Language): A  
Language for Expert Systems  
Diagnosis.  
AD-A131 403

\*CHANG, JEN-SHIH

\* \* \*  
Numerical Simulation of Spacecraft  
Charging Phenomena at High  
Altitude.  
AD-A130 043

\*CHANG, T. C. \* \* \*  
Likelihood Ratio Tests on  
Covariance Matrices and Mean  
Vectors of Complex Multivariate  
Normal Populations and Their  
Applications in Time Series.  
AD-A131 523

\*CHEN, BO-SHOE \* \* \*  
Event-Based Specification and  
Verification of Distributed  
Systems.  
AD-A128 629

\*CHEN, CHENG-IE \* \* \*  
Optimum Quantization of FIR Wiener  
and Matched Filters.  
AD-A129 599

\* \* \*  
Robust Wiener Filtering for  
Multiple Inputs with Channel  
Distortion.  
AD-A129 648

\*CHEN, M. H. \* \* \*  
Relativistic Calculations and  
Measurements of Energies, Auger  
Rates, and Lifetimes.  
AD-A130 094

\*CHEN, MAU HSIUNG \* \* \*  
K-MM Auger-Intensity Peaks from  
Double-Hole Energy-Level Crossings.  
AD-A130 053

\* \* \*  
Relativistic Calculation of Atomic  
M-Shell Ionization by Protons.  
AD-A130 664

\* \* \*  
Deexcitation of Light Li-Like ions

in the  $1s2s2p$  State.  
AD-A131 556

\*CHEN, SAN-MEI \* \* \*  
Isomers of (PhMeSi)6 and (PhMeSi)5,  
AD-A128 428

\*CHENG, SHIHONG \* \* \*  
On Limiting Distributions of Order  
Statistics with Variable Ranks from  
Stationary Sequences.  
AD-A128 484

\* \* \*  
On a Problem Concerning Spacings.  
AD-A128 509

\*CHESIER, DANIEL L. \* \* \*  
Design of a System That Understands  
Informal Specifications.  
AD-A131 479

\*CHILDERS, DONALD G. \* \* \*  
Spectral Analysis: Prediction and  
Extrapolation.  
AD-A129 218

\* \* \*  
Signal Processing in Evoked  
Potential Research: Applications of  
Filtering and Pattern Recognition,  
AD-A129 651

\*CHOW, MING-FA \* \* \*  
Magnetic Field and Magnetic Isotope  
Effects on Photoinduced Emulsion  
Polymerization.  
AD-A128 671

\*CHOW, ROBERT \* \* \*  
Electrical and Optical Properties  
of InP Grown by Molecular Beam  
Epitaxy Using Cracked Phosphine.  
AD-A131 264

\*CHRISTE, KARL O. \* \* \*

PERSONAL AUTHOR INDEX-4  
UNCLASSIFIED EVN35A

CAS-CHR

# UNCLASSIFIED

Reactions of Azidotrifluoromethane with Halogen-Containing Oxidizers, AD-A128 416 \* \* \*

New Syntheses of Pentafluorotellurium Hypochlorite, AD-A128 427

\*CHRISTIANSEN, WALTER H. \* \* \*  
Aerodynamics of E-Beam Sustained Discharges in Flow, AD-A130 100

\*CHUNG, CHAO-JEN \* \* \*  
Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization, AD-A128 671

\*CHUNG, DEBORAH D. L. \* \* \*  
Structural and Kinetic Properties of Graphite Intercalation Compounds, AD-A129 579

\*COBLITZ, D. \* \* \*  
Advanced Training Techniques Using Computer Generated Imagery, AD-A129 215

\*COLE, JULIAN D. \* \* \*  
Note on the Axisymmetric Sonic Jet, AD-A129 211

\*COLEMAN, PAUL J., JR \* \* \*  
An Experimental Study of Atmosphere-Ionosphere Coupling Using Magnetometers, AD-A130 057

\*COLTON, DAVID \* \* \*  
The Three Dimensional Inverse Scattering Problem for Acoustic Waves.

AD-A128 450 \* \* \*  
The Unique Solvability of the Null Field Equations of Acoustics, AD-A129 263

\*CONNERS, RICHARD W. \* \* \*  
A Study of Texture Analysis Algorithms, AD-A130 034

\* \* \*  
A Study of Texture Analysis Algorithms, AD-A131 498

\*CRAIG, J. \* \* \*  
Coordinated Research Program in Pulsed Power Physics, AD-A129 554

\*CRASEMAN, BERND \* \* \*  
Deexcitation of Light Li-Like Ions in the 1s2s2p State, AD-A131 556

\*CRASEMANN, B. \* \* \*  
Relativistic Calculations and Measurements of Energies, Auger Rates, and Lifetimes, AD-A130 094

\*CRASEMANN, BERND \* \* \*  
K-MM Auger-Intensity Peaks from Double-Hole Energy-Level Crossings, AD-A130 053

\* \* \*  
Relativistic Calculation of Atomic M-Shell Ionization by Protons, AD-A130 564

\* \* \*  
Atomic Inner-Shell Transitions---Theory and the Need for Experiments, AD-A130 748

\*CRICK, FRANCIS H. C.

\* \* \*  
Reciprocal Neural Pathways and Associative Networks, AD-A129 480

\*CRIMMINS, T. R. \* \* \*  
Uniqueness of Phase Retrieval for Functions with Sufficiently Disconnected Support, AD-A129 994

\*CROSSMAN, F. W. \* \* \*  
Fracture Mechanics of Sub-Laminate Cracks, AD-A130 782

\*CROSSMAN, FRANK W. \* \* \*  
Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates, AD-A129 313

\*CRUICKSHANK, ALEXANDER M. \* \* \*  
1982 Gordon Research Conference on Holography and Optical Information Processing, AD-A129 137

\*CULICK, F. E. C. \* \* \*  
Linear Theory of Pressure Oscillations in Liquid Fueled Ramjet Engines, AD-A130 882

\* \* \*  
Linear Theory of Pressure Oscillations in Liquid-Fueled Ramjet Engines, AD-A131 610

\*DAFALIAS, Y. F. \* \* \*  
In Situ Characterization of Saturated Sands and Silts for the Prediction of Dynamic Shear Modulus and Shear Wave Velocity, AD-A131 376

PERSONAL AUTHOR INDEX-5  
UNCLASSIFIED EVN35A

CHR-DAF



# UNCLASSIFIED

- \*DAI, HAI-LUNG \* \* \*  
Electric Dipole Moments of Excited  
Vibrational Levels in the X1A1  
State of Formaldehyde by Stimulated  
Emission Spectroscopy.  
AD-A129 147
- \*DALEY, D. J. \* \* \*  
Limit Laws for the Maximum of  
Weighted and Shifted I.I.D. Random  
Variables.  
AD-A128 359
- \*DAS, P. \* \* \*  
Profiling the Implanted Region in  
Si Using Nondestructive Transverse  
Acoustoelectric Voltage versus  
Voltage Technique.  
AD-A129 289
- \*DAS, PANKAJ K. \* \* \*  
Semiconductor Surface  
Characterization Using Transverse  
Acoustoelectric Voltage versus  
Voltage Measurements.  
AD-A131 347
- \*DASS, WILLIAM C. \* \* \*  
Fundamental Properties of Soils for  
Complex Dynamic Loadings: Dynamic  
Constitutive Modeling of Sandy  
Soils.  
AD-A131 284
- \*DAVARI, B. \* \* \*  
Profiling the Implanted Region in  
Si Using Nondestructive Transverse  
Acoustoelectric Voltage versus  
Voltage Technique.  
AD-A129 289
- \*DAVARI, B. \* \* \*  
Semiconductor Surface  
Characterization Using Transverse  
Acoustoelectric Voltage versus  
Voltage Measurements.
- AD-A131 347
- \*DAVID, LAWRENCE D. \* \* \*  
Isomers of (PhMeSt)6 and (PhMeSt)5.  
AD-A128 428
- \*DAVIES, B. M. \* \* \*  
Azimuthal Dependence of Impact  
Scattering in Electron Energy Loss  
Spectroscopy.  
AD-A128 476
- \*DEJONG, GERALD \* \* \*  
Artificial Intelligence  
Implications for Information  
Retrieval.  
AD-A131 382
- \*DELP, EDWARD J. \* \* \*  
Parallel Processing for Computer  
Vision.  
AD-A131 615
- \*DEMAS, J. N. \* \* \*  
Phase-Plane and Guggenheim Methods  
for Treatment of Kinetic Data.  
AD-A129 207
- \*DESHAZER, LARRY G. \* \* \*  
Investigation of Optical Fibers for  
Nonlinear Optics.  
AD-A130 656
- \*DEVELIS, JOHN G. \* \* \*  
Use of Holographic Linear Fringe  
Linearization Interferometry (FLI)  
for Detection of Defects.  
AD-A129 323
- \*DEVRIES, PAUL L. \* \* \*  
Zeeman Transitions in Collisions of  
Na with Xe.  
AD-A129 220
- \*DEWAR, MICHAEL J. S. \* \* \*  
Isomeric Sigma and Pi Radicals from  
Carboxylic Acids and Amides.  
AD-A128 453
- \* \* \*  
Tritium Migration in Tritiated  
Anisole.  
AD-A128 454
- \* \* \*  
Ground States of Molecules. 56.  
MNDO Calculations for Molecules  
Containing Sulfur.  
AD-A129 131
- \*DEWETTE, F. W. \* \* \*  
Adsorbate Structure Modeling Based  
on Electron Energy Loss  
Spectroscopy and Lattice Dynamical  
Calculations. Application to  
O/A1(111).  
AD-A128 464
- \*DE YOUNG, DOUGLAS J. \* \* \*  
Chemical Reactions of  
Tetramesityldisilene.  
AD-A128 457
- \*DIELS, JEAN-CLAUDE \* \* \*  
Coherent Propagation and Sum  
Frequency Generation into the  
Vacuum Ultraviolet.  
AD-A130 729
- \*DIMOTAKIS, P. E. \* \* \*  
Chemically Reacting Turbulent Shear  
Layers.  
AD-A131 553
- \*DING, YI-HUI \* \* \*  
A Relationship between Planetary  
Waves and Persistent Rain- and  
Thunderstorms in China  
(Zusammenhaenge Zwischen Planetaren  
Wellen und Anhaltenden Regen- und  
Gewitterstuermen in China).

PERSONAL AUTHOR INDEX-6  
UNCLASSIFIED EVN35A

DAI-DIN

# UNCLASSIFIED

- AD-A128 445  
\*DOANE, THOMAS R. \* \* \*  
Sublethal Effects of JP-4 on  
Lepomis macrochirus.  
AD-A128 618  
\*DORRIS, J. F. \* \* \*  
A Plasticity Model for Flow of  
Granular Materials under Triaxial  
Stress States.  
AD-A130 747  
\*DVORKIS, P. \* \* \*  
A Study of the Angular Radiation  
Pattern of Smith-Purcell Radiation.  
AD-A130 095  
\*EDEN, J. G. \* \* \*  
Alkali-Rare Gas and Metal-Halide  
Molecules as Potential Tunable and  
Efficient Lasers in the Visible.  
AD-A128 534  
\*ELISHA, U. \* \* \*  
A Study of the Angular Radiation  
Pattern of Smith-Purcell Radiation.  
AD A130 095  
\*ELLISON, G. BARNEY \* \* \*  
Infrared Chemiluminescence Studies  
of Ion-Molecule Reactions in a  
Flowing Afterglow.  
AD-A130 138  
\*ENGEL, GLADYS R. \* \* \*  
Evidence of Tectonic Release from  
Underground Nuclear Explosions in  
Long-Period P Waves.  
AD-A129 290  
\*ERICHSEN, DEBORAH F. \* \* \*  
A Modification for Preparing the  
Chronic Lung-Lymph Fistula in  
Sheep.  
AD-A129 518  
\*ERISMAN, A. M. \* \* \*  
A Structurally Stable Modification  
of Hellerman-Rarick's P4 Algorithm  
for Reordering Unsymmetric Sparse  
Matrices.  
AD-A129 344  
\*ERSKINE, J. L. \* \* \*  
Adsorbate Structure Modeling Based  
on Electron Energy Loss  
Spectroscopy and Lattice Dynamical  
Calculations. Application to  
O/A1(111).  
AD-A128 464  
\*FIELD, ROBERT W. \* \* \*  
Azimuthal Dependence of Impact  
Scattering in Electron Energy Loss  
Spectroscopy.  
AD-A128 476  
\*FIENUP, J. R. \* \* \*  
High Resolution Electron Energy  
Loss Studies of Chemisorbed Species  
on Aluminum and Titanium.  
AD-A129 204  
\*EURELL, JO ANN C. \* \* \*  
Analysis of Long Bone and Vertebral  
Failure Patterns.  
AD-A129 233  
\*EVANS, J. M. \* \* \*  
Cardiovascular Regulation in  
Canines during Low-Frequency  
Acceleration.  
AD-A129 537  
\*FAIRBANK, WILLIAM M. \* \* \*  
Background Information on the He(3)  
Nuclear Gyroscope.  
AD-A130 755  
\*FARRUGIA, LOUIS J. \* \* \*  
Cervical Spine Analysis for  
Ejection Injury Prediction.  
AD-A131 081  
\*FARRUGIA, LOUIS J. \* \* \*  
A Synthetic Route to Heteronuclear  
Clusters Containing Iridium and  
Rhodium: X-Ray Crystal Structures  
of  $(\text{IrOs}_3(\text{u-H})_2(\text{u-Cl})(\text{CO})_{12})$  and  
 $(\text{Ir}_2\text{Rh}_2(\text{u-CO})(\text{u}_3\text{-CO})_2(\text{CO})_4(\text{n-}\text{C}_5\text{Me}_5)_2)$ .  
AD-A128 520  
\*FEDERER, W. T. \* \* \*  
Pairwise Orthogonal F-Rectangle  
Designs.  
AD-A128 099  
\*FIELD, ROBERT W. \* \* \*  
Electric Dipole Moments of Excited  
Vibrational Levels in the X1A1  
State of Formaldehyde by Stimulated  
Emission Spectroscopy.  
AD-A129 147  
\*FIENUP, J. R. \* \* \*  
Sequential Excitation Preparation  
of Molecular Energy Levels with  
Special Structural and Chemical  
Properties.  
AD-A129 307  
\*FIENUP, J. R. \* \* \*  
Uniqueness of Phase Retrieval for  
Functions with Sufficiently  
Disconnected Support.  
AD-A129 994  
\*FINDLER, NICHOLAS V. \* \* \*  
On Automatic Generation of  
Descriptive and Normative Theories.  
AD-A129 396  
\*FINDLER, NICHOLAS V. \* \* \*  
A Note on the Functional Estimation  
of Values of Hidden Variables ---  
An Extended Module for Expert

PERSONAL AUTHOR INDEX-7  
UNCLASSIFIED EVN35A

DOA-FIN

# UNCLASSIFIED

- Systems.  
AD-A130 749
- Approaches to Automatic Strategy Analysis and Synthesis.  
AD-A130 806
- On a Computer-Based Theory of Strategies.  
AD-A131 351
- \*FINK, MARK J. \* \* \*  
Chemical Reactions of Tetramesityldisilene.  
AD-A128 457
- \*FIREY, B. \* \* \*  
Adsorbate Structure Modeling Based on Electron Energy Loss Spectroscopy and Lattice Dynamical Calculations. Application to O/A1(111).  
AD-A128 464
- \*FISCHER, J. E. \* \* \*  
Resistivity Anomalies and Phase Transitions in Alkali-Metal Graphite Intercalation Compounds.  
AD-A130 055
- \*FITZPATRICK, G. L. \* \* \*  
Investigation of the Rayleigh Critical Angle Phenomenon for the Characterization of Surface Properties.  
AD-A131 530
- \*FLANDROIS, S. \* \* \*  
Heat Capacity and Magnetic Studies of Graphite Intercalated with FeCl<sub>3</sub> and NiCl<sub>2</sub>(+2).  
AD-A131 390
- \*FLEMING, JOHN A. \* \* \*  
Efficient Computation for Large
- Scale Optimization.  
AD-A129 293
- \*FLEMING, WENDELL H. \* \* \*  
Optimal Control of Markov Processes.  
AD-A129 296
- \*FOLEY, G. M. T. \* \* \*  
Resistivity Anomalies and Phase Transitions in Alkali-Metal Graphite Intercalation Compounds.  
AD-A130 055
- \*FRANCISCO, JOSEPH S. \* \* \*  
Infrared Multiphoton Decomposition and Energy-Dependent Absorption Cross Sections of Chloroethane-d(0), -2-d(1), and -2,2,2-d(3).  
AD-A131 604
- \*FRITSCH, MICHAEL J. \* \* \*  
Analysis and Prediction of Severe Storm Environment.  
AD-A129 247
- \*FRITTS, DAVID C. \* \* \*  
The Transient Critical-Level Interaction in a Boussinesq Fluid.  
AD-A128 462
- \*FUSCO, G. \* \* \*  
Stable Equilibria in a Scalar Parabolic Equation with Variable Diffusion.  
AD-A131 221
- \*GANNON, J. D. \* \* \*  
Prime Program Decomposition.  
AD-A129 132
- \*GARRISON, B. J. \* \* \*  
Theoretical Aspects of Cluster
- Formation by keV Bombardment of Rare-Gas Solids.  
AD-A131 283
- \*GARWOOD, GERALD A., JR. \* \* \*  
Structure and Composition of Adsorbed Layers Formed by Sequential Exposure of Pt(100) and Pt(111) to Pairs of Compounds: Solvents and Electrolytic Substances.  
AD-A131 607
- \*GEBALLE, T. H. \* \* \*  
Response to 'Comment on 'Tunneling alpha squared F (omega) as a Function of Composition in A15 NbGe'', by B. R. Sood.  
AD-A131 584
- \*GELINAS, ROBERT J. \* \* \*  
Moving Finite Elements in 2-D.  
AD-A131 279
- \*GEORGE, NICHOLAS \* \* \*  
Optical Systems and Statistical Optics.  
AD-A131 297
- \*GEORGE, THOMAS F. \* \* \*  
Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.  
AD-A128 446
- Zeeman Transitions in Collisions of Na with Xe.  
AD-A129 220
- Semiclassical Theory of Collisional Ionization.  
AD-A130 054
- \*GEORGIPOULOS, MICHAEL \* \* \*  
A Collision Resolution Protocol

PERSONAL AUTHOR INDEX-8  
UNCLASSIFIED EVN35A

FIN-GEO

# UNCLASSIFIED

With Limited Channel Sensing -  
 Finitely Many Users.  
 AD-A128 501

\*GERR, NEIL L. \* \* \*  
 Analysis of a Delayed Delta  
 Modulator.  
 AD-A131 208

\*GERTSBAKH, ILVA B. \* \* \*  
 Asymptotic Methods in Reliability  
 Theory: A Review.  
 AD-A130 163

\*GIACOBINI, EZIO \* \* \*  
 Acute Effects of Anticholinesterase  
 Agents on Pupillary Function.  
 AD-A128 434

\*GIAMEI, A. F. \* \* \*  
 Deformation Studies in Workable  
 Superalloys.  
 AD-A131 606

\*GODARD, R. \* \* \*  
 Numerical Simulation of Spacecraft  
 Charging Phenomena at High  
 Altitude.  
 AD-A130 043

\*GOFORTH, TOM \* \* \*  
 Development of Automated Detection  
 and Discrimination Techniques for  
 Use at Regional to Teleseismic  
 Distances.  
 AD-A129 604

\*GOLDEN, K. I. \* \* \*  
 Plasma Response Functions,  
 Fluctuation-Dissipation Relations  
 and the Velocity-Average-  
 Approximation.  
 AD-A131 505

\*GOLDMAN, MARTIN V. \* \* \*  
 Plasma Wave Turbulence and Particle  
 Heating Caused by Electron Beams,  
 Radiation, and Pinches.  
 AD-A129 320

\*GOODMAN, JOSEPH \* \* \*  
 Optical Computing Research.  
 AD-A129 166

\*GOSHORN, DAVID P. \* \* \*  
 Superconductivity of the Graphite  
 Intercalation Compounds K<sub>2</sub>HgC<sub>8</sub> and  
 K<sub>2</sub>HgC<sub>8</sub>: Evidence from Specific  
 Heat.  
 AD-A129 759

The Specific Heat, 0.4K to 90K, of  
 C<sub>8</sub>Cs, C<sub>8</sub>Rb and Their Parent HOPG  
 (highly Oriented Pyrolytic  
 Graphite).  
 AD-A131 361

\* \* \*  
 Low-Temperature Specific Heat of  
 the Graphite Intercalation  
 Compounds KC<sub>8</sub>, CsC<sub>8</sub>, RbC<sub>8</sub>, and  
 Their Parent Highly Oriented  
 Pyrolytic Graphite.  
 AD-A131 362

\*GOVER, A. \* \* \*  
 A Study of the Angular Radiation  
 Pattern of Smith-Purcell Radiation.  
 AD-A130 095

\*GRACOVETSKY, S. \* \* \*  
 Cervical Spine Analysis for  
 Ejection Injury Prediction.  
 AD-A131 081

\*GREEN, CORDELL \* \* \*  
 Research on Synthesis of Concurrent  
 Computing Systems.  
 AD-A130 048

\*GREENSTADT, EUGENE W. \* \* \*  
 A Project to Develop an Index of PC  
 3,4,5 Geomagnetic Pulsations and to  
 Study Their Control by Solar Wind  
 Parameters.  
 AD-A130 135

\*GRIMES, R. G. \* \* \*  
 A Structurally Stable Modification  
 of Hellerman-Rarick's P4 Algorithm  
 for Reordering Unsymmetric Sparse  
 Matrices.  
 AD-A129 344

\*GUERARD, D. \* \* \*  
 Superconductivity and Phonon  
 Specific Heat of the Alkali Metal  
 Mercurographites (Rb,K) HgC<sub>4</sub> and  
 (Rb,K) HgC<sub>8</sub>.  
 AD-A130 857

\*GUERARD, DANIEL \* \* \*  
 Superconductivity of the Graphite  
 Intercalation Compounds K<sub>2</sub>HgC<sub>8</sub> and  
 Rb<sub>2</sub>HgC<sub>8</sub>: Evidence from Specific  
 Heat.  
 AD-A129 759

\*GUILLEN, MICHAEL A. \* \* \*  
 Unified Theory of Plasma  
 Correlations.  
 AD-A131 478

\*GUNZBURGER, MAX D. \* \* \*  
 Mixed Finite Element Methods with  
 Applications to Flow and Other  
 Problems.  
 AD-A130 678

\*GUOSHENG, ZHOU \* \* \*  
 Large-Signal Results for Degenerate  
 Four-Wave Mixing and Phase  
 Conjugate Resonators.  
 AD-A131 311

PERSONAL AUTHOR INDEX-9  
 UNCLASSIFIED EVN35A

GFR-GUD

# UNCLASSIFIED

- \*GUZMAN, J.      \* \* \*  
Configurational Characteristics of  
the Polysulfides. 2. Dipole Moments  
and Gauche Effects in Poly (1,3-  
dithiocane).  
AD-A128 150
- \*HAGLER, M.      \* \* \*  
Coordinated Research Program in  
Pulsed Power Physics.  
AD-A129 554
- \*HALE, JACK K.      \* \* \*  
Stability in Linear Delay  
Equations.  
AD-A129 264
- \*Stable Equilibria in a Scalar  
Parabolic Equation with Variable  
Diffusion.  
AD-A131 221
- \*HALL, PETER      \* \* \*  
Limit Laws for the Maximum of  
Weighted and Shifted I.I.D. Random  
Variables.  
AD-A128 359
- \*HALLER, KENNETH J.      \* \* \*  
Isomers of (PhMeSi)6 and (PhMeSi)5.  
AD-A128 428
- \*HALVERSON, DON R.      \* \* \*  
Interim Report for CY 1982.  
AD-A129 261
- \*HAN, BYUNG-HEE      \* \* \*  
Organic Sonochemistry. Sonic  
Acceleration of the Reformatsky  
Reaction.  
AD-A128 481
- \*HANKEY, W. L.      \* \* \*
- Stability of Compressible Wake and  
Jet Flows.  
AD-A128 414
- \*HANSSGEN, KENNETH B.      \* \* \*  
An Example of Boundary Layer in  
Delay Equations.  
AD-A129 144
- \*HARLOW, CHARLES A.      \* \* \*  
A Study of Texture Analysis  
Algorithms.  
AD-A130 034
- A Study of Texture Analysis  
Algorithms.  
AD-A131 498
- \*HARRINGTON, JAMES A.      \* \* \*  
Investigation of Optical Fibers for  
Nonlinear Optics.  
AD-A130 656
- \*HARRIS, S. E.      \* \* \*  
Research Studies on Radiative  
Collisional Processes.  
AD-A128 533
- \*HARTER, PAUL K., JR.      \* \* \*  
Proving Real-Time Properties of  
Programs with Temporal Logic.  
AD-A129 013
- \*HATFIELD, L.      \* \* \*  
Coordinated Research Program in  
Pulsed Power Physics.  
AD-A129 554
- \*HAUCK, D.      \* \* \*  
Advanced Training Techniques Using  
Computer Generated Imagery.  
AD-A129 215
- \*HAYES, PHILIP J.      \* \* \*
- Flexible Parsing.  
AD-A131 495
- \*HECHT, M. S.      \* \* \*  
Prime Program Decomposition.  
AD-A129 132
- \*HEDAYAT, A. S.      \* \* \*  
Pairwise Orthogonal T-Rectangle  
Designs.  
AD-A128 099
- The Family of t-Designs. Part II.  
AD-A129 217
- A Collection of A-Optimal Designs  
for Control-Test Treatment  
Comparisons. I.  
AD-A129 322
- \*HEFFERNAN, DANIEL M.      \* \* \*  
Study of a Nuclear Gamma-Ray Laser.  
AD-A129 571
- Induced Decay of Positronium and  
Grasers.  
AD-A130 035
- \*HELGERSON, RICHARD      \* \* \*  
A Modification for Preparing the  
Chronic Lung-Lymph Fistula in  
Sheep.  
AD-A129 518
- \*HELLEUR, CHRISTOPHER D.      \* \* \*  
Cervical Spine Analysis for  
Ejection Injury Prediction.  
AD-A131 081
- \*HELMBERGER, DONALD V.      \* \* \*  
Evidence of Tectonic Release from  
Underground Nuclear Explosions in  
Long-Period P Waves.  
AD-A129 290

# UNCLASSIFIED

\*HELSTROM, CARL W. \* \* \*  
Computation of Counting  
Distributions Arising from a Single-  
Stage Multiplicative Process.  
AD-A131 480

\*HERBOLD, R. J. \* \* \*  
Prime Program Decomposition.  
AD-A129 132

\*HERDMAN, TERRY L. \* \* \*  
An Example of Boundary Layer in  
Delay Equations.  
AD-A129 144

\*HERRIN, EUGENE \* \* \*  
Development of Automated Detection  
and Discrimination Techniques for  
Use at Regional to Teleseismic  
Distances.  
AD-A129 604

\*HERRMAN, L. R. \* \* \*  
In Situ Characterization of  
Saturated Sands and Silts for the  
Prediction of Dynamic Shear Modulus  
and Shear Wave Velocity.  
AD-A131 376

\*HERSHBERGER, JOHN F. \* \* \*  
Structure and Composition of  
Adsorbed Layers Formed by  
Sequential Exposure of Pt(100) and  
Pt(111) to Pairs of Compounds.  
Solvents and Electrolytic  
Substances.  
AD-A131 607

\*HESSELINK, LAMBERTUS \* \* \*  
Optical Computing Research.  
AD-A129 166

\*HEWITT, P. W. \* \* \*

Transverse Jet Break-up and  
Atomization with Rapid Vaporization  
along the Trajectory.  
AD-A130 706

\* \* \*  
Atomization of Impinging Liquid  
Jets in a Supersonic Crossflow.  
AD-A130 714

\*HIEYMANN, M. A. \* \* \*  
Cell Specific Response of Cardiac  
Poly ADP R and DNA Synthesis to  
Circulatory Stress.  
AD-A129 575

\*HILDEBRAND, B. P. \* \* \*  
Investigation of the Rayleigh  
Critical Angle Phenomenon for the  
Characterization of Surface  
Properties.  
AD-A131 530

\*HINCHEN, J. J. \* \* \*  
Rotational Relaxation Studies of  
Hydrogen Fluoride.  
AD-A128 384

\*HISHAM, MOHAMED W. M. \* \* \*  
Arrhenius Parameters of Elementary  
Reactions Involved in the Oxidation  
of Neopentane.  
AD-A129 192

\* \* \*  
The Decomposition of 2,2,3,3-  
Tetramethylbutane in KCl- and R2O3-  
Coated Vessels in the Presence of  
Oxygen.  
AD-A130 683

\*HOBBS, R. H. \* \* \*  
Rotational Relaxation Studies of  
Hydrogen Fluoride.  
AD-A128 384

\*HOBBS, ROBERT H. \* \* \*

Theoretical Studies of Kinetic  
Mechanisms of Negative Ion  
Formation in Plasmas.  
AD-A129 832

\*HOCK, J. L. \* \* \*  
The Occupational Statistics for  
Indistinguishable Trimers on a 3XN  
Lattice Space.  
AD-A129 219

\*HOLLANDER, MYLES \* \* \*  
Testing Whether New is Better than  
Used of a Specified Age.  
AD-A128 443

\*HOMMA, H. \* \* \*  
Response of Cracks in Structural  
Materials to Short Pulse Loads.  
AD-A131 565

\*HORII, H. \* \* \*  
Instability of a Half-Space with  
Frictional Materials.  
AD-A128 156

\*HORVATH, STEVEN M. \* \* \*  
Automated Limb Blood Flow  
Plethysmograph.  
AD-A129 232

\* \* \*  
Effects of Exhaustive Exercise on  
the Sleep of Men and Women.  
AD-A129 670

\*HOWARTH, JOHN A. \* \* \*  
Surface Termination in Chain  
Reaction and the Interaction with  
Homogeneous Termination.  
AD-A130 715

\*HSIA, Y. \* \* \*  
On the Structure of an  
Underexpanded Rectangular Jet.

PERSONAL AUTHOR INDEX-11  
UNCLASSIFIED EVN35A

HEL-HSI

# UNCLASSIFIED

AD A129 227

\*HUANG, XI YI

Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.

AD A128 446

\*HUBBARD, ARTHUR T.

Structure and Composition of Adsorbed Layers Formed by Sequential Exposure of Pt(100) and Pt(111) to Pairs of Compounds: Solvents and Electrolytic Substances.

AD-A131 607

\*RUSEBYE, EYSTEIN S.

Identification of Seismic Sources - Earthquake or Underground Explosion. Proceedings of the NATO Advanced Study Institute Held at Voksensasen, Oslo, Norway, September 8-18, 1980.

AD-A129 441

\*ROSSON, G.

Focused Acoustic Beams for Accurate Phase Measurements.

AD-A130 033

\*INFANTE, ETTORE F.

Stability in Linear Delay Equations.

AD-A129 264

\*INGRAM, L. S.

Catalytic Combustion for Advanced Jet Engines.

AD 8075 283L

\*IVERSON, WARREN P.

The Mechanism of Anaerobic (Microbial) Corrosion.

AD-A131 223

\*JACKOWSKI, G.

Cell Specific Response of Cardiac Poly ADP-R and DNA Synthesis to Circulatory Stress.

AD-A129 575

\*ADP-ribosylation of Nonhistone Chromatin Proteins in Vivo and of Actin in Vitro and Effects of Normal and Abnormal Growth Conditions and Organ-Specific Hormonal Influences.

AD-A129 703

\*JACKOWSKI, GEORGE

The Influence of Triiodothyronine on Polyadenosine-Diphosphoribose Polymerase and RNA Synthesis in Cardiac Nuclei.

AD-A129 519

Quantitative Isolation of Oligo- and Polyadenosine-Diphosphoribosylated Proteins by Affinity Chromatography from Livers of Normal and Dimethylinitrosamine-Treated Syrian Hamsters.

AD-A129 540

Age-Dependent Variation of Rates of Polyadenosine-Diphosphoribose Synthesis by Cardiac Nuclei and the Lack of Correlation of Enzymatic Activity with Macromolecular Size Distribution of DNA.

AD-A129 647

Regulation of Chromatin Function by Polyadenosine Diphosphoribosylation.

AD-A129 675

Age Dependent Selective Effects of Hydrocortisone and Aldosterone on the Polyadenosine Diphosphoribose Metabolism of Isolated Cardiacocyte

Nuclei.

AD-A129 686

\*JAGANNATH, CHIRAVURRI

Infrared Nonlinear Optics.

AD-A129 993

\*JAIN, R. K.

Phase Conjugate Optical Resonator.

AD A130 044

\*JAYAMEERA, KOLF

Investigation of Shear-Induced Turbulence by MST (Mesosphere-Stratosphere-Troposphere Radar).

AD-A129 203

\*JEFFERY, JOHN C.

Synthesis and Characterization of Tungsten-Cobalt, -Rhodium and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-CCl4Me-4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7) and PtW(mu-CCl4Me-4)(CO)2(PMe3)(eta4-C8H12)(eta5-C5H5).

AD-A128 465

\*JIAN, QUAN, YAO

Large-Signal Results for Degenerate Four-Wave Mixing and Phase Conjugate Resonators.

AD-A131 311

\*JOHNSON, LANE R.

Regional Discrimination with Broadband Data.

AD-A128 493

\*JONES, RICHARD A.

Adaptive Hybrid Picture Coding.

AD-A129 221

\*KAGEYAMA, S.

PERSONAL AUTHOR INDEX-12  
UNCLASSIFIED EVN35A

HUA-KAG

# UNCLASSIFIED

\* \* \*  
The Family of t-Designs. Part II.  
AD-A129 217

\*KALLIANPUR, G. \* \* \*

A Finitely Additive White Noise  
Approach to Nonlinear Filtering.  
AD-A129 224

\*KALMAN, G. \* \* \*

Plasma Response Functions,  
Fluctuation-Dissipation Relations  
and the Velocity-Average-  
Approximation.  
AD-A131 505

\*KAMITSUMA, M. \* \* \*

Numerical Simulation of Spacecraft  
Charging Phenomena at High  
Altitude.  
AD-A130 043

\*KARAMCHETI, K. \* \* \*

On the Structure of an  
Underexpanded Rectangular Jet.  
AD-A129 227

\*KARANDIKAR, R. L. \* \* \*

A Finitely Additive White Noise  
Approach to Nonlinear Filtering.  
AD-A129 224

\*KASSAM, SALEEM A. \* \* \*

Some Generalizations of Median  
Filters.  
AD-A129 202

\* \* \*

Robust Hypothesis Testing and  
Robust Time Series Interpolation  
and Regression.  
AD-A129 544

\* \* \*

Optimum Quantization of Fir Wiener  
and Matched Filters.  
AD-A129 599

\* \* \*

Robust Wiener Filtering for  
Multiple Inputs with Channel  
Distortion.  
AD-A129 648

\* \* \*

Robust Signal Processing for  
Communication Systems,  
AD-A129 761

\*KATEKARU, JAMES Y. \* \* \*

Structure and Composition of  
Adsorbed Layers Formed by  
Sequential Exposure of Pt(100) and  
Pt(111) to Pairs of Compounds:  
Solvents and Electrolytic  
Substances.  
AD-A131 607

\*KAVANAGH, PATRICK \* \* \*

Aerodynamics of Advanced Axial-Flow  
Turbomachinery.  
AD-A131 360

\*KAYE, JACK A. \* \* \*

Collinear Quantum Mechanical  
Probabilities and Rate Constants  
for the Br + HCl(v=2,3,4) Reaction  
Using Hyperspherical Coordinates.  
AD-A128 474

\*KAZAKOS, DEMETRIOS \* \* \*

Limited Sensing Random Multiple  
Access Using Binary Feedback.  
AD-A129 251

\*KAZAKOS, DIMITRI \* \* \*

Optimal Constrained Representation  
and Filtering of Signals.  
AD-A129 157

\* \* \*

Robust Prediction and Interpolation  
for Vector Stationary Processes.  
AD-A130 973

\*KEEN, ALAN

\* \* \*

The Decomposition of 2,2,3,3-  
Tetramethylbutane in KCl- and B2O3-  
Coated Vessels in the Presence of  
Oxygen,  
AD-A130 683

\*KEILSON, JULIAN \* \* \*

Parts and Service Demand  
Distribution Generated by Primary  
Production.  
AD-A131 497

\*KELLER, JOSEPH B. \* \* \*

Rising Bubbles.  
AD-A131 572

\*KENAN, R. P. \* \* \*

Optical Waveguide Spatial Filters.  
AD-A129 746

\*KHURI-YAKUB, B. T. \* \* \*

Quantitative Evaluation of Real-  
Time Synthetic Aperture Acoustic  
Images.  
AD-A130 062

\*KIHLSSTROM, K. E. \* \* \*

Response to 'Comment on 'Tunneling  
alpha squared F (omega) as a  
Function of Composition in A15  
NbGe', by B. R. Sood.  
AD-A131 584

\*KING, RICHARD M. \* \* \*

Research on Synthesis of Concurrent  
Computing Systems.  
AD-A130 048

\*KIND, G. S. \* \* \*

Focused Acoustic Beams for Accurate  
Phase Measurements,  
AD-A130 033



# UNCLASSIFIED

- \*KINSEY, JAMES L. \* \* \*  
Electric Dipole Moments of Excited  
Vibrational Levels in the X1A1  
State of Formaldehyde by Stimulated  
Emission Spectroscopy.  
AD-A129 147
- \* \* \*  
Sequential Excitation Preparation  
of Molecular Energy Levels with  
Special Structural and Chemical  
Properties.  
AD-A129 307
- \*KIRSCH, ANDREAS \* \* \*  
The Three Dimensional Inverse  
Scattering Problem for Acoustic  
Waves.  
AD A128 450
- \*KIRSTEN, EVA \* \* \*  
Mitochondrial ADP-  
Ribosyltransferase System.  
AD-A128 669
- \* \* \*  
Quantitative Isolation of Oligo-  
and Polyadenosine-  
Diphosphoribosylated Proteins by  
Affinity Chromatography from Livers  
of Normal and DimethylNitrosamine-  
Treated Syrian Hamsters.  
AD-A129 540
- \* \* \*  
Regulation of Chromatin Function by  
Polyadenosine  
Diphosphoribosylation.  
AD-A129 675
- \*KLOPPER, G. H. \* \* \*  
Research on Topics in Transonic  
Flow Theory and Adaptive Grid  
Generation.  
AD-A128 485
- \*KNAPP, C. F. \* \* \*  
Cardiovascular Regulation in  
Canines during Low-Frequency
- Acceleration.  
AD-A129 537
- \*KONISHI, JUNICHI \* \* \*  
Inherent Anisotropy and Shear  
Strength of Assembly of Oval Cross-  
Sectional Rods.  
AD-A131 616
- \*KOOCHESFAHANI, M. M. \* \* \*  
Chemically Reacting Turbulent Shear  
Layers.  
AD-A131 553
- \*KOSHIGOE, L. G. \* \* \*  
Specific Heat of Octahydro -  
1,3,5,7 - Tetranitro - 1,3,5,7 -  
Tetrazocine (HMX).  
AD-A128 442
- \* \* \*  
Thermophysical Property  
Determinations Using Transient  
Techniques.  
AD-A130 707
- \*KOSTUK, RAYMOND \* \* \*  
Optical Computing Research.  
AD-A129 166
- \*KOWLER, EILEEN \* \* \*  
Eye Movements and Visual  
Information Processing.  
AD-A129 225
- \*KRESS, RAINER \* \* \*  
The Unique Solvability of the Null  
Field Equations of Acoustics.  
AD-A129 263
- \*KRILE, THOMAS F. \* \* \*  
Space-Variant Optical Systems.  
AD-A130 098
- \*KRISHNAIAN, P. R. \* \* \*
- \*KRISHNAMURTHY, E. V. \* \* \*  
Likelihood Ratio Tests on  
Covariance Matrices and Mean  
Vectors of Complex Multivariate  
Normal Populations and Their  
Applications in Time Series.  
AD-A131 523
- \* \* \*  
Error-Free Parallel High-Order  
Convergent Iterative Matrix  
Inversion Based on p-ADIC  
approximation.  
AD-A128 418
- \*KRISTIANSEN, M. \* \* \*  
Coordinated Research Program in  
Pulsed Power Physics.  
AD-A129 554
- \*KROTHAPALLI, A. \* \* \*  
On the Structure of an  
Underexpanded Rectangular Jet.  
AD-A129 227
- \*KUAN, DARWIN \* \* \*  
Three-Dimensional Feature  
Extraction.  
AD-A131 333
- \*KUBAT, PETER \* \* \*  
Parts and Service Demand  
Distribution Generated by Primary  
Production.  
AD-A131 497
- \*KUN, E. \* \* \*  
Cell Specific Response of Cardiac  
Poly ADP-R and DNA Synthesis to  
Circulatory Stress.  
AD-A129 575
- \* \* \*  
ADP-ribosylation of Nonhistone  
Chromatin Proteins in Vivo and of  
Actin in Vitro and Effects of

PERSONAL AUTHOR INDEX-14  
UNCLASSIFIED EVN35A

KIN-KUN

# UNCLASSIFIED

Normal and Abnormal Growth  
Conditions and Organ-Specific  
Hormonal Influences.  
AD-A129 703

\*KUN, ERNEST

\* \* \*  
Mitochondrial ADP-  
Ribosyltransferase System.  
AD-A128 669

\* \* \*  
The Influence of Triiodothyronine  
on Polyadenosine Diphosphoribose  
Polymerase and RNA Synthesis in  
Cardiocyte Nuclei.  
AD-A129 519

\* \* \*  
Quantitative Isolation of Oligo-  
and Polyadenosine-  
Diphosphoribosylated Proteins by  
Affinity Chromatography from Livers  
of Normal and Dimethylnitrosamine-  
Treated Syrian Hamsters.  
AD-A129 540

\* \* \*  
Decrease of Hepatic Mono and Oligo  
Adenosine Diphosphoribose Content  
and Augmentation of (14C) Ribose  
Incorporation during Induction of  
Growth by Bovine Growth Hormone in  
Hypophysectomized Rats.  
AD-A129 610

\* \* \*  
Spectral Analysis of the  
Conformation of Polyadenosine  
Diphosphoribose: Evidence  
Indicating Secondary Structure.  
AD-A129 612

\* \* \*  
Age-Dependent Variation of Rates of  
Polyadenosine-Diphosphoribose  
Synthesis by Cardiocyte Nuclei and  
the Lack of Correlation of  
Enzymatic Activity with  
Macromolecular Size Distribution of  
DNA.  
AD-A129 647

\* \* \*  
Regulation of Chromatin Function by  
Polyadenosine  
Diphosphoribosylation.

AD-A129 675

\* \* \*  
Age Dependent Selective Effects of  
Hydrocortisone and Aldosterone on  
the Polyadenosine Diphosphoribose  
Metabolism of Isolated Cardiocyte  
Nuclei.  
AD-A129 686

\*KUPPERMAN, ARON

\* \* \*  
Collinear Quantum Mechanical  
Probabilities and Rate Constants  
for the Br + HCl(v=2,3,4) Reaction  
Using Hyperspherical Coordinates.  
AD-A128 474

\*KUPPERMAN, ARON

\* \* \*  
The Quantum Dynamics of Chemical  
Reactions.  
AD-A130 160

\*KUROSAKA, M.

\* \* \*  
Unsteady Swirling Flows in Gas  
Turbines.  
AD-A128 386

\*KUSHNER, HAROLD J.

\* \* \*  
Asymptotic Behavior of Stochastic  
Approximation and Large Deviations.  
AD-A129 209

\* \* \*  
Weak Convergence and Asymptotic  
Properties of Adaptive Filters with  
Constant Gains.  
AD-A129 214

\*LAFRAMBOISE, J. G.

\* \* \*  
Numerical Simulation of Spacecraft  
Charging Phenomena at High  
Altitude.  
AD-A130 043

\*LAGRANGE, P.

\* \* \*  
Superconductivity and Phonon  
Specific Heat of the Alkali Metal

Mercurio-graphitides (Rb,K) HgC4 and  
(Rb,K) HgC8.  
AD-A130 857

\*LAGRANGE, PHILIPPE

\* \* \*  
Superconductivity of the Graphite  
Intercalation Compounds KHgC8 and  
RbHgC8: Evidence from Specific  
Heat.  
AD-A129 759

\*LAM, KAI-SHUE

\* \* \*  
Semiclassical Theory of Collisional  
Ionization.  
AD-A130 054

\*LAM, LED

\* \* \*  
Nuclear Moment Alignment,  
Relaxation and Detection  
Mechanisms.  
AD-A131 546

\*LANDOLT, ARLO U.

\* \* \*  
UBVRI Photometric Standard Stars  
around the Celestial Equator,  
AD-A130 228

\*LANGE, F. F.

\* \* \*  
Strengthening and Strength  
Uniformity of Structural Ceramics.  
AD-A129 570

\*LAPEYRE, GERALD J.

\* \* \*  
Angular-Resolved Electron Emission  
Studies of Microwave Materials.  
AD-A129 205

\*LARSEN, M. F.

\* \* \*  
Comparison of Tropopause Height and  
Frontal Boundary Locations Based on  
Radar and Radiosonde Data.  
AD-A128 467

\*LAUER, G. S.

PERSONAL AUTHOR INDEX-15  
UNCLASSIFIED  
EVN35A

KLIN-LAU

# UNCLASSIFIED

- \* \* \*  
Distributed Detection of Signal Waveforms in Additive Gaussian Observation Noise.  
AD-A131 016
- \*LAWLER, JAMES E. \* \* \*  
Experimental and Theoretical Investigation of Optogalvanic Effects.  
AD-A130 111
- \*LAY, THORNE \* \* \*  
Localized Velocity Anomalies in the Lower Mantle.  
AD-A129 617
- \*LEE, J. C. \* \* \*  
Likelihood Ratio Tests on Covariance Matrices and Mean Vectors of Complex Multivariate Normal Populations and Their Applications in Time Series.  
AD-A131 523
- \*LEE, YONG HOON \* \* \*  
Some Generalizations of Median Filters.  
AD-A129 202
- \*LEONE, STEPHEN R. \* \* \*  
Infrared Chemiluminescence Studies of Ion-Molecule Reactions in a Flowing Afterglow.  
AD-A130 138
- \*LEWIS, J. G. \* \* \*  
A Structurally Stable Modification of Hellerman-Rarick's P4 Algorithm for Reordering Unsymmetric Sparse Matrices.  
AD-A129 344
- \*LI, SHENG S. \* \* \*
- Study of Deep-Level Defects and Transport Properties vs Growth Parameters and Annealing Conditions in III-V Compound Semiconductors.  
AD-A130 776
- \*LIANG, K. \* \* \*  
Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images.  
AD-A130 062
- \*LIANG, K. Y. \* \* \*  
Nonparametric Empirical Bayes Estimation of Reliability.  
AD-A128 475
- \*LIBOFF, RICHARD L. \* \* \*  
Kinetic Theory.  
AD-A129 437
- \* \* \*  
Study of a Nuclear Gamma-Ray Laser.  
AD-A129 571
- \* \* \*  
Induced Decay of Positronium and Grasers.  
AD-A130 035
- \* \* \*  
Exciton-Laser Amplifier.  
AD-A130 036
- \* \* \*  
Unified Theory of Plasma Correlations.  
AD-A131 478
- \*LICATO, P. E. \* \* \*  
The Occupational Statistics for Indistinguishable Trimers on a 3XN Lattice Space.  
AD-A129 219
- \*LILEY, P. E. \* \* \*  
Transport Properties of Selected Elements and Compounds in the Gaseous State. Part 2.  
AD-A129 060
- \*LIN, JUI-TENG \* \* \*  
Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.  
AD-A128 446
- \*LIU, K. C. \* \* \*  
Exciton-Laser Amplifier.  
AD-A130 036
- \*LO, RON \* \* \*  
A Note on the Functional Estimation of Values of Hidden Variables --- An Extended Module for Expert Systems.  
AD-A130 749
- \*LUHMANN, JANET G. \* \* \*  
An Experimental Study of Atmosphere-Ionosphere Coupling Using Magnetometers.  
AD-A130 057
- \*MAJUMDAR, D. \* \* \*  
A Collection of A-Optimal Designs for Control-Test Treatment Comparisons. I.  
AD-A129 322
- \*MAKRINI, M. EL \* \* \*  
Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K) HgC4 and (Rb,K) HgC8.  
AD-A130 857
- \*MAKRINI, MOHAMED EL \* \* \*  
Superconductivity of the Graphite Intercalation Compounds KHgC8 and RBHgC8: Evidence from Specific Heat.  
AD-A129 759
- \*MAPLE, ELWOOD

PERSONAL AUTHOR INDEX-16  
UNCLASSIFIED EVN35A

LAW-MAP

# UNCLASSIFIED

\* \* \*  
Geomagnetic Pulsations-  
Production/Interpretation.  
AD-A131 448

\*MARADUDIN, ALEXEI A.  
\* \* \*  
The Interaction of Electromagnetic  
Radiation with Solid Materials.  
AD-A130 727

\*MARCUS, GLENN D.  
\* \* \*  
A Collision Resolution Protocol  
with Limited Channel Sampling -  
Finitely Many Users.  
AD-A128 501

\*MARCUS, RICHARD R.  
\* \* \*  
Automated Limb Blood Flow  
Plethysmograph.  
AD-A129 232

\*MARK, HANS  
\* \* \*  
K-MM Auger-Intensity Peaks from  
Double-Hole Energy-Level Crossings.  
AD-A130 053

\* \* \*  
Relativistic Calculation of Atomic  
M-Shell Ionization by Photons,  
AD-A130 664

\* \* \*  
Deexcitation of Light Li-Like ions  
in the 1s2s2p State,  
AD-A131 556

\*MARK, J. E.  
\* \* \*  
Configurational Characteristics of  
the Polysulfides. 3. Dipole Moments  
of Poly(trimethylene sulfide) and  
Comparisons between some  
Polysulfides and the Corresponding  
Polyoxides.  
AD-A128 159

\* \* \*  
Configurational Characteristics of  
the Polysulfides. 2. Dipole Moments  
and Gauche Effects in Poly (1,3-

dithiocane).  
AD-A128 160

\* \* \*  
Theoretical Studies of Relatively  
Rigid Polymer Chains.  
AD-A128 421

\*MARKWORTH, A. J.  
\* \* \*  
Hot Isostatic Pressing of Ceramic  
Powder Compacts.  
AD-A131 514

\*MARQUIS, J. A.  
\* \* \*  
Cardiovascular Regulation in  
Caines during Low-Frequency  
Acceleration,  
AD-A 29 537

\*MASON, THOMAS W.  
\* \* \*  
Development of a Text-Editor Based  
Relational Data Base Management  
System.  
AD-A131 481

\*MAYVILLE, RONALD A.  
\* \* \*  
Use of Holographic Linear Fringe  
Linearization Interferometry (FLI)  
for Detection of Defects.  
AD-A129 323

\*MCCLUSKEY, RICHARD J.  
\* \* \*  
Study of the Chlorine-Basic  
Hydrogen Peroxide Reaction.  
AD-A128 372

\*MCCORMICK, WILLIAM P.  
\* \* \*  
An Iterated Logarithm Law Result  
for Extreme Values form Gaussian  
Sequences.  
AD-A129 559

\* \* \*  
Weak and Strong Law Results for a  
Function of the Spacings.  
AD-A130 705

\*MCCOY, J. K.  
\* \* \*  
Hot Isostatic Pressing of Ceramic  
Powder Compacts.  
AD-A131 514

\*MCCOY, L. G.  
\* \* \*  
Hot Isostatic Pressing of Ceramic  
Powder Compacts.  
AD-A131 514

\*MCCUNE, BRIAN P.  
\* \* \*  
The Intelligent Program Editor: A  
knowledge Based System for  
Supporting Program and  
Documentation Maintenance.  
AD-A129 153

\*MCEVILLY, T. V.  
\* \* \*  
Regional Discrimination with  
Broadband Data.  
AD-A128 493

\*MCGEOCH, MALCOLM W.  
\* \* \*  
Experimental Study of Dissociative  
Attachment in Optically-Pumped  
Lithium Molecules.  
AD-A131 601

\*MCGILLEM, CLARE D.  
\* \* \*  
Spectral Analysis: Prediction and  
Extrapolation.  
AD-A129 218

\* \* \*  
Effects of Ongoing EEG on Latency  
Measurements of Evoked Potentials.  
AD-A129 520

\* \* \*  
Comparison of Linear and Quadratic  
Classification of Event-Related  
Potentials on the Basis of Their  
Exogenous or Endogenous Components,  
AD-A129 522

\* \* \*  
Preprocessing for Improved  
Classification of Evoked

PERSONAL AUTHOR INDEX-17  
UNCLASSIFIED EVN35A

MAR-MCG

# UNCLASSIFIED

- Potentials, AD-A129 645 \* \* \*
- Signal Processing in Evoked Potential Research: Applications of Filtering and Pattern Recognition, AD-A129 651 \* \* \*
- \*MCKEE, MICHAEL L. \* \* \*
- Ground States of Molecules. 56. MNDO Calculations for Molecules Containing Sulfur, AD-A129 131 \* \* \*
- \*MCNICHOLS, D. T. \* \* \*
- Estimation under Reliability Growth Assuming Gamma Failure Models. AD-A130 063 \* \* \*
- Maximum Likelihood Estimation of Unimodal and Decreasing Densities Based on Arbitrarily Right-Censored Data. AD-A130 217 \* \* \*
- \*MCQUISTAN, R. B. \* \* \*
- The Occupational Statistics for Indistinguishable Trimers on a 3XN Lattice Space. AD-A129 219 \* \* \*
- \*MEHRABADI, M. M. \* \* \*
- A Statistical Study of Fabric in a Random Assembly of Spherical Granules, AD-A130 742 \* \* \*
- \*MEIER, G. H. \* \* \*
- Fundamental Research Directed to Advanced High Temperature Coating Systems Beyond the Current State-of-the-Art Systems. AD-A131 618 \* \* \*
- \*MENARD, ALBERT R. \* \* \*
- Transient Heat Transfer in Coated Superconductors. AD-A129 600 \* \* \*
- \*MENDELI, J. P. \* \* \*
- Pairwise Orthogonal F-Rectangle Designs. AD-A128 099 \* \* \*
- \*MERAKOS, LAZAROS \* \* \*
- Limited Sensing Random Multiple Access Using Binary Feedback. AD-A129 251 \* \* \*
- \*MERKLE, DOUGLAS H. \* \* \*
- Fundamental Properties of Soils for Complex Dynamic Loadings: Dynamic Constitutive Modeling of Sandy Soils. AD-A131 284 \* \* \*
- \*MESSINA, N. A. \* \* \*
- Catalytic Combustion for Advanced Jet Engines. AD-B075 283L \* \* \*
- \*MICHELS, H. HARVEY \* \* \*
- Spherical-Harmonic Expansion Techniques for Multicenter Integrals over STO's (Slater-Type Orbitals). A Re-Examination for Vector Processing Computers, AD-A128 429 \* \* \*
- Theoretical Studies of Kinetic Mechanisms of Negative Ion Formation in Plasmas. AD-A129 832 \* \* \*
- \*MICHL, JOSEF \* \* \*
- Chemical Reactions of Tetramethyldisilene, AD-A128 457 \* \* \*
- \*MILLER, DAVID F. \* \* \*
- An Output Matching Approach to Multivariable Linear Digital Control. AD-A128 662 \* \* \*
- Multivariable Linear Digital Control via State Space Output Matching. AD-A129 432 \* \* \*
- \*MILLS, D. L. \* \* \*
- The Interaction of Electromagnetic Radiation with Solid Materials. AD-A130 727 \* \* \*
- \*MINAGA, TAKEYOSHI \* \* \*
- Spectral Analysis of the Conformation of Polyadenosine Diphosphoribose: Evidence Indicating Secondary Structure, AD-A129 612 \* \* \*
- Regulation of Chromatin Function by Polyadenosine Diphosphoribosylation, AD-A129 675 \* \* \*
- \*MITCHELL, BRIAN J. \* \* \*
- Attenuation of Seismic Waves at Regional Distances. AD-A128 396 \* \* \*
- \*MITCHISON, GRAEME J. \* \* \*
- Reciprocal Neural Pathways and Associative Networks. AD-A129 480 \* \* \*
- \*MITTAL, SANJAY \* \* \*
- CSRL (Conceptual Structures Representation Language): A Language for Expert Systems Diagnosis. AD-A131 403 \* \* \*
- \*MONTROLL, ELLIOTT W. \* \* \*

# UNCLASSIFIED

- \* \* \*  
Scattering of Waves by  
Irregularities in Periodic Discrete  
Lattice Spaces. 2. Calculations.  
AD-A130 665
- \*MUDGE, T. N.  
Parallel Processing for Computer  
Vision.  
AD-A131 615
- \*MURAYAMA, Y.  
Response of Cracks in Structural  
Materials to Short Pulse Loads.  
AD-A131 565
- \*MUTTART, L. E.  
Hot Isostatic Pressing of Ceramic  
Powder Compacts.  
AD-A131 514
- \*MYKKELTVEIT, SVEIN  
Identification of Seismic Sources -  
Earthquake or Underground  
Explosion. Proceedings of the NATO  
Advanced Study Institute Held at  
Voksenasen, Oslo, Norway, September  
8-18, 1980.  
AD-A129 441
- \*NAYAK, K.  
Theoretical Studies of Relatively  
Rigid Polymer Chains.  
AD-A128 421
- \*NEMAT-NASSER, S.  
Instability of a Half-Space with  
Frictional Materials.  
AD-A128 156
- \* \* \*  
A Statistical Study of Fabric in a  
Random Assembly of Spherical  
Granules.  
AD-A130 742
- \* \* \*  
A Plasticity Model for Flow of  
Granular Materials under Triaxial  
Stress States.  
AD-A130 747
- \* \* \*  
Influence of Fabric on Liquefaction  
and Densification Potential of  
Cohesionless Sand.  
AD-A130 949
- \*NEMAT-NASSER, SIAVOUCHE  
Inherent Anisotropy and Shear  
Strength of Assembly of Oval Cross-  
Sectional Rods.  
AD-A131 616
- \*NEUTS, MARCEL F.  
Report on Sponsored Research on  
Algorithmic Methods In Probability.  
AD-A128 536
- \*NEWMAN, STEVEN B.  
An Investigation Into the Nature of  
Snowflake Aggregation in the  
Vicinity of the Melting Layer in  
Stratiform Clouds.  
AD-A129 343
- \*NICOL, ANN T.  
Nuclear Moment Alignment,  
Relaxation and Detection  
Mechanisms.  
AD-A131 546
- \*NIXON, D.  
Research on Topics in Transonic  
Flow Theory and Adaptive Grid  
Generation.  
AD-A128 485
- \*NUTTLI, OTTO W.  
Attenuation of Seismic Waves at  
Regional Distances.  
AD-A128 396
- \*OCHOA, ELLEN  
Optical Computing Research.  
AD-A129 166
- \*ODA, M.  
A Statistical Study of Fabric in a  
Random Assembly of Spherical  
Granules.  
AD-A130 742
- \*ODA, MASANOBU  
Inherent Anisotropy and Shear  
Strength of Assembly of Oval Cross-  
Sectional Rods.  
AD-A131 616
- \*O'DONNELL, ROBERT D.  
Comparison of Linear and Quadratic  
Classification of Event-Related  
Potentials on the Basis of Their  
Exogenous or Endogenous Components.  
AD-A129 522
- \*OGG, JOHN C.  
Breakup and Droplet Formation of  
Slurry Jets.  
AD-A130 699
- \*OKIISHI, THEODORE H.  
Aerodynamics of Advanced Axial-Flow  
Turbomachinery.  
AD-A131 360
- \*OLSON, GREGORY J.  
The Mechanism of Anaerobic  
(Microbial) Corrosion.  
AD-A131 223
- \*OLSON, W. P.  
Sources of Surface Magnetic Field  
Variability.  
AD-A130 168

## UNCLASSIFIED

\*ONN, D. G.

\* \* \*  
Low-Temperature Specific Heat of  
the Graphite Intercalation  
Compounds KC8, CsC8, RbC8, and  
Their Parent Highly Oriented  
Pyrolytic Graphite.  
AD-A131 362

\*ONN, DAVID G.

\* \* \*  
Thermal and Physical Properties of  
Graphite Intercalation Compounds.  
AD-A129 677

\* \* \*  
Resistivity Anomalies and Phase  
Transitions in Alkali-Metal  
Graphite Intercalation Compounds.  
AD-A130 055

\* \* \*  
Superconductivity and Phonon  
Specific Heat of the Alkali Metal  
Mercurographitides (Rb,K) HgC4 and  
(Rb,K) HgC8.  
AD-A130 857

\* \* \*  
The Specific Heat, 0.4K to 90K, of  
C8Cs, C8Rb and Their Parent HOPG  
(highly Oriented Pyrolytic  
Graphite).  
AD-A131 361

\* \* \*  
Heat Capacity and Magnetic Studies  
of Graphite Intercalated with FeCl3  
and NiCl2(+2).  
AD-A131 390

\*ORPEN, A. GUY

\* \* \*  
A Synthetic Route to Heteronuclear  
Clusters Containing Iridium and  
Rhodium: X-Ray Crystal Structures  
of (IrOs3(u-H)2(u-C1)(CO)12) and  
(Ir2Rh2(u-CO)(u3-CO)2(CO)4(n-  
C5Me5)2).  
AD-A128 520

\*PADGETT, W. J.

\* \* \*  
Nonparametric Empirical Bayes  
Estimation of Reliability.

AD-A128 475

\* \* \*  
On Bayes Estimation of Reliability  
for the Birnbaum-Saunders Fatigue  
Life Model.  
AD-A128 477  
\* \* \*  
Estimation under Reliability Growth  
Assuming Gamma Failure Models.  
AD-A130 063

\* \* \*  
Maximum Likelihood Estimation of  
Unimodal and Decreasing Densities  
Based on Arbitrarily Right-Censored  
Data.  
AD-A130 217

\*PAKIARI, ALI H.  
\* \* \*  
Isomeric Sigma and Pi Radicals from  
Carboxylic Acids and Amides.  
AD-A128 453

\*PAO, P. S.  
\* \* \*  
Mechanisms of Corrosion Fatigue in  
High Strength I/M (Ingot  
Metallurgy) and P/M (Powder  
Metallurgy) Aluminum Alloys.  
AD-A130 041

\*PAPANTONI-KAZAKOS, P.  
\* \* \*  
A Collision Resolution Protocol  
with Limited Channel Sensing -  
Finitely Many Users.  
AD-A128 501

\* \* \*  
Robust Prediction and Interpolation  
for Vector Stationary Processes.  
AD-A130 973  
\* \* \*  
Robust Linear Filtering for  
Multivariable Stationary Time  
Series.  
AD-A131 209

\*PARK, DONG HO

\* \* \*  
Testing Whether New Is Better than  
Used of a Specified Age.

AD-A128 443

\*PARTER, SEYMOUR V.  
\* \* \*  
Block Iterative Methods for  
Elliptic Finite Element Equations.  
AD-A129 150

\*PASTOR, ANTONIO C.  
\* \* \*  
Investigation of Optical Fibers for  
Nonlinear Optics.  
AD-A130 656

\*PASTOR, RICARDO C.  
\* \* \*  
Investigation of Optical Fibers for  
Nonlinear Optics.  
AD-A130 656

\*PEELE, WARREN D.

\* \* \*  
USAF/SCEEE Graduate Student Summer  
Support Program (1982). Management  
and Technical Report.  
AD-A130 767

\* \* \*  
USAF/SCEEE Summer Faculty Research  
Program (1982). Management Report.  
AD-A130 768

\* \* \*  
USAF/SCEEE Summer Faculty Research  
Program. Research Reports. Volume  
1.  
AD-A130 769

\* \* \*  
USAF/SCEEE Summer Faculty Research  
Program (1982). Research Reports.  
Volume 2.  
AD-A130 770

\*PELLER, LEONARD

\* \* \*  
Regulation of Chromatin Function by  
Polyadenosine  
Diphosphoribosylation.  
AD-A129 675

\*PEPPER, DAVID M.

\* \* \*  
Nuclear Magnetic Resonance

PERSONAL AUTHOR INDEX-20  
UNCLASSIFIED EVN35A

ONN-PEP

# UNCLASSIFIED

Gyroscope.  
AD-A130 102

\*PETERSON, D. K. \* \* \*  
Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images.  
AD-A130 062

\*PETTIT, F. S. \* \* \*  
Fundamental Research Directed to Advanced High Temperature Coating Systems Beyond the Current State-of-the-Art Systems.  
AD-A131 618

\*PIERINI, ADRIANA B. \* \* \*  
Isomeric Sigma and Pi Radicals from Carboxylic Acids and Amides.  
AD-A128 453

\*POMALAZA, CARLOS A. \* \* \*  
Preprocessing for Improved Classification of Evoked Potentials.  
AD-A129 645

\*POMEROY, PAUL W. \* \* \*  
Enhance and Test the Remote Seismic Terminal. Volume I.  
AD-A128 375

\* \* \*  
The Use of Regional Seismic Waves for Discrimination and Yield Determination. Volume II.  
AD-A128 376

\*POMPHREY, NEIL \* \* \*  
Scattering of Waves by Irregularities in Periodic Discrete Lattice Spaces. 2. Calculations.  
AD-A130 665

\*POOLE, W. G., JR. \* \* \*  
A Relationship between Planetary Waves and Persistent Rain- and Thunderstorms in China

A Structurally Stable Modification of Hellerman-Rarick's p4 Algorithm for Reordering Unsymmetric Sparse Matrices.  
AD-A129 344

\*POOR, H. VINCENT \* \* \*  
Robust Signal Processing for Communication Systems.  
AD-A129 761

\*PROKOPENKO, S. M. L. \* \* \*  
Numerical Simulation of Spacecraft Charging Phenomena at High Altitude.  
AD-A130 043

\*PROSCHAN, FRANK \* \* \*  
Applications of a Unified Theory of Monotonicity in Selection Problems.  
AD-A128 441

\* \* \*  
Testing Whether New Is Better than Used of a Specified Age.  
AD-A128 443

\* \* \*  
Periodic Replacement with Increasing Minimal Repair Costs at Failure.  
AD-A130 081

\*PUYEAR, R. L. \* \* \*  
Identification and Quantification of the Water Soluble Components of JP-4 and a Determination of Their Biological Effects upon Selected Freshwater Organisms.  
AD-A129 526

\*QINGSHI, ZHU \* \* \*  
Infrared Multiphoton Decomposition and Energy-Dependent Absorption Cross Sections of Chloroethane-d(0), -2-d(1), and -2,2,2-d(3).  
AD-A131 604

\*RABITZ, HERSCHEL \* \* \*  
Studies in Non-Equilibrium Statistical Mechanics.  
AD-A129 338

\*RAM-MOHAN, L. R. \* \* \*  
Infrared Nonlinear Optics.  
AD-A129 993

\*RAND, STEPHEN C. \* \* \*  
Investigation of Optical Fibers for Nonlinear Optics.  
AD-A130 656

\*RANDALL, D. C. \* \* \*  
Cardiovascular Regulation in Canines during Low-Frequency Acceleration.  
AD-A129 537

\*RAO, C. RADHAKRISHNA \* \* \*  
Prediction of Future Observations in Polynomial Growth Curve Models. Part 1.  
AD-A129 359

\*REEVE, JOHN N. \* \* \*  
Development and Use of Anucleate Bacterial Cells to Assay the In Vitro Activity of Pollutants.  
AD-A128 378

\*REGAN, D. \* \* \*  
Assessment and Development of Oculomotor Flying Skills by the Application of the Channel Theory of Vision.  
AD-A129 534

\*REITER, E. R. \* \* \*  
A Relationship between Planetary Waves and Persistent Rain- and Thunderstorms in China



# UNCLASSIFIED

- (Zusammenhaenge Zwischen Planetaren  
Wellen und Anhaltenden Regen- und  
Gewitterstuermen in China).  
AD-A128 445
- \*REYNOLDS, CHARLES H.  
\* \* \*  
Tritium Migration in Tritiated  
Anisole.  
AD-A128 454
- \*REYNOLDS, GEORGE O.  
\* \* \*  
Use of Holographic Linear Fringe  
Linearization Interferometry (FLI)  
for Detection of Defects.  
AD-A129 323
- \*RIANDE, E.  
\* \* \*  
Configurational Characteristics of  
the Polysulfides. 3. Dipole Moments  
of Poly(trimethylene sulfide) and  
Comparisons between Some  
Polysulfides and the Corresponding  
Polyoxides.  
AD-A128 159
- \* \* \*  
Configurational Characteristics of  
the Polysulfides. 2. Dipole Moments  
and Gauche Effects in Poly (1,3-  
dithiocane).  
AD-A128 160
- \*RIBARSKY, MARTIN W.  
\* \* \*  
Correlation and Collective Modes in  
Narrow Band Materials.  
AD-A131 516
- \*RICE, STEPHEN O.  
\* \* \*  
Computation of Counting  
Distributions Arising from a Single-  
Stage Multiplicative Process.  
AD-A131 180
- \*RIDER, D. M.  
\* \* \*  
Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational  
Structure of Molecular Ions.  
AD-A128 448
- \*RIITCHIE, ROBERT O.  
\* \* \*  
Fatigue Behavior of Long and Short  
Cracks in Wrought and Powder  
Aluminum Alloys.  
AD-A131 324
- \*RITSKO, J. J.  
\* \* \*  
Heat Capacity and Magnetic Studies  
of Graphite Intercalated with FeCl<sub>3</sub>  
and NiCl<sub>2</sub>(+2).  
AD-A131 390
- \*ROBERTS, JOHN MELVILLE  
\* \* \*  
Metallurgical Characterization of  
Niobium/Tin Superconducting  
Multifilamentary Wires.  
AD-A131 018
- \*ROBINSON, ROBERT M.  
\* \* \*  
Latitudinal Variations of Auroral-  
Zone Ionization Distribution.  
AD-A128 612
- \*ROFSSET, JOSE M.  
\* \* \*  
Effects of Rigid Inclusions on Wave  
Propagation.  
AD-A131 366
- \*ROETTGER, J.  
\* \* \*  
Comparison of Tropopause Height and  
Frontal Boundary Locations Based on  
Radar and Radiosonde Data.  
AD-A128 467
- \*ROMASCHIN, A. D.  
\* \* \*  
ADP-ribosylation of Nonhistone  
Chromatin Proteins in Vivo and of  
Actin in Vitro and Effects of  
Normal and Abnormal Growth  
Conditions and Organ-Specific.
- Hormonal Influences.  
AD-A129 703
- \*ROMASCHIN, ALEXANDER D.  
\* \* \*  
Quantitative Isolation of Oligo-  
and Polyadenosine-  
Diphosphoribosylated Proteins by  
Affinity Chromatography from Livers  
of Normal and Dimethylinitrosamine-  
Treated Syrian Hamsters.  
AD-A129 540
- \* \* \*  
Decrease of Hepatic Mono and Oligo  
Adenosine Diphosphoribose Content  
and Augmentation of (14C) Ribose  
Incorporation during Induction of  
Growth by Bovine Growth Hormone in  
Hypophysectomized Rats.  
AD-A129 610
- \* \* \*  
Age Dependent Selective Effects of  
Hydrocortisone and Aldosterone on  
the Polyadenosine Diphosphoribose  
Metabolism of Isolated Cardiocyte  
Nuclei.  
AD-A129 686
- \*ROMICK, GERALD J.  
\* \* \*  
Investigation of Shear-Induced  
Turbulence by MSI (Mesosphere-  
Stratosphere-Troposphere Radar).  
AD-A129 203
- \*ROOTZEN, HOLGER  
\* \* \*  
Central Limit Theory for  
Martingales via Random Change of  
Time.  
AD-A128 439
- \*ROWCLIFFE, DAVID J.  
\* \* \*  
Dip Process Thermal-Barrier  
Coatings for Superalloys.  
AD-A129 292
- \*RUDDOLPH, A. M.  
\* \* \*  
Cell Specific Response of Cardiac

PERSONAL AUTHOR INDEX-22  
UNCLASSIFIED EVN35A

REY-RUD

# UNCLASSIFIED

Poly ADP-R and DNA Synthesis to Circulatory Stress.  
AD-A129 575

\*RUPPERT, DAVID \* \* \*  
A Comparison between Maximum Likelihood and Generalized Least Squares in a Heteroscedastic Linear Model.  
AD-A129 162

\*SAUBEN, MIKLOS \* \* \*  
Unsteady Transonic Flow in a Two-Dimensional Diffuser: Interpretation of Experimental Results.  
AD-A129 406

\*SALOUR, M. M. \* \* \*  
Non-Linear Optical Interactions in Semiconductors.  
AD-A129 995

\*SAMBALE, CLEMENS \* \* \*  
Synthesis and Characterization of Tungsten-Cobalt, -Rhodium and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-C6H4Me-4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7) and PtW(mu-C(C6H4Me-4)C(C)(CO)(PMe3)(eta4-C8H12)(eta5-C5H5).  
AD-A128 465

\*SANDELL, N. R., JR \* \* \*  
Distributed Detection of Signal Waveforms in Additive Gaussian Observation Noise.  
AD-A131 016

\*SANDELL, NILS R., JR \* \* \*  
Sensor Correlation and Data Fusion Theory.  
AD-A131 510

\*SAWCHUK, A. A. \* \* \*  
Nonlinear Real-Time Optical Signal Processing.  
AD-A129 291

\*SCHACK, CARL J. \* \* \*  
Reactions of Azidotrifluoromethane with Halogen-Containing Oxidizers.  
AD-A128 416

\* \* \*  
New Syntheses of Pentafluorotellurium Hypochlorite.  
AD-A128 427

\*SCHAEFER, G. \* \* \*  
Coordinated Research Program in Pulsed Power Physics.  
AD-A129 554

\*SCHERR, S. J. \* \* \*  
Stability of Compressible Wake and Jet Flows.  
AD-A128 414

\*SCHETZ, J. A. \* \* \*  
Transverse Jet Break-up and Atomization with Rapid Vaporization along the Trajectory.  
AD-A130 706

\* \* \*  
Atomization of Impinging Liquid Jets in a Supersonic Crossflow.  
AD-A130 714

\*SCHETZ, JOSEPH A. \* \* \*  
Breakup and Droplet Formation of Slurry Jets.  
AD-A130 699

\*SCHLIER, ROBERT E. \* \* \*  
Experimental Study of Dissociative Attachment in Optically-Pumped Lithium Molecules.  
AD-A131 601

\*SCHMIDT, MANFRED F. \* \* \*  
Synthesis and Characterization of Tungsten-Cobalt, -Rhodium and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-C6H4Me-4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7) and PtW(mu-C(C6H4Me-4)C(C)(CO)(PMe3)(eta4-C8H12)(eta5-C5H5).  
AD-A128 485

\*SEROVY, GEORGE K. \* \* \*  
Aerodynamics of Advanced Axial-Flow Turbomachinery.  
AD-A131 360

\*SERVAES, DONALD A. \* \* \*  
Use of Holographic Linear Fringe Linearization Interferometry (FLI) for Detection of Defects.  
AD-A129 323

\*SHAPIOR, DANIEL G. \* \* \*  
The Intelligent Program Editor: A Knowledge Based System for Supporting Program and Documentation Maintenance.  
AD-A129 153

\*SHERWOOD, HOWARD \* \* \*  
Dominates on Equivalence Classes of Semigroup Operations.  
AD-A128 463

\* \* \*  
Characterizing Dominates on a Family of Triangular Norms.  
AD-A128 482

\*SHOCKEY, D. A. \* \* \*  
Response of Cracks in Structural Materials to Short Pulse Loads.  
AD-A131 535

\*SHOEMAKER, R. L. \* \* \*

PERSONAL AUTHOR INDEX-23  
UNCLASSIFIED EVN35A

RUP-SHO

# UNCLASSIFIED

Specific Heat of Octahydro -  
1,3,5,7 - Tetranitro - 1,3,5,7 -  
Tetrazocine (HMX).  
AD-A128 442 \* \* \*  
Thermophysical Property  
Determinations Using Transient  
Techniques.  
AD-A130 707 \* \* \*  
\*SHWARTZ, ADAM \* \* \*  
Weak Convergence and Asymptotic  
Properties of Adaptive Filters with  
Constant Gains.  
AD-A129 214 \* \* \*  
\*SIEGEL, H. J. \* \* \*  
Parallel Processing for Computer  
Vision.  
AD-A131 615 \* \* \*  
\*SIEGEL, LEAH J. \* \* \*  
Parallel Processing for Computer  
Vision.  
AD-A131 615 \* \* \*  
\*STEGMAN, A. E. \* \* \*  
Large-Signal Results for Degenerate  
Four-Wave Mixing and Phase  
Conjugate Resonators.  
AD-A131 311 \* \* \*  
\*SILEVITCH, M. B. \* \* \*  
Effects of Nonconvective Electric  
Fields on Magnetospheric Plasma  
Dynamics.  
AD-A128 432 \* \* \*  
\*SINHA, BIMAL KUMAR \* \* \*  
Rejection of Multivariate Outliers.  
AD-A130 686 \* \* \*  
\*SLANGER, TOM G. \* \* \*  
Conjectures on the Origin of the

Surface Glow of Space Vehicles,  
AD-A128 637 \* \* \*  
\*SLUD, ERIC \* \* \*  
Multivariate Dependent Renewal  
Processes.  
AD-A128 818 \* \* \*  
\*SMITH, B. W. \* \* \*  
Spatial and Temporal Studies of a  
Glow Discharge.  
AD-A128 461 \* \* \*  
\*SMITH, STEVEN A. \* \* \*  
Investigation of Shear-Induced  
Turbulence by MST (Mesosphere-  
Stratosphere-Troposphere Radar).  
AD-A129 203 \* \* \*  
\*STANLEY, H. EUGENE \* \* \*  
Final Report on AFOSR-81-0042.  
AD-A130 101 \* \* \*  
\*STECH, HARLAN W. \* \* \*  
An Example of Boundary Layer in  
Delay Equations.  
AD-A129 144 \* \* \*  
\*STEELE, EARL L. \* \* \*  
USAF/SCEEE Graduate Student Summer  
Support Program (1982). Management  
and Technical Report.  
AD-A130 767 \* \* \*  
USAF/SCEEE Summer Faculty Research  
Program (1982). Management Report.  
AD-A130 768 \* \* \*  
USAF/SCEEE Summer Faculty Research  
Program. Research Reports. Volume  
1.  
AD-A130 769 \* \* \*  
USAF/SCEEE Summer Faculty Research  
Program (1982). Research Reports.

Volume 2.  
AD-A130 770 \* \* \*  
\*STEIER, WILLIAM H. \* \* \*  
Research in Electronics: Joint  
Services Electronics Program.  
AD-A130 791 \* \* \*  
\*STEINFELD, J. I. \* \* \*  
Infrared Multiphoton Decomposition  
and Energy-Dependent Absorption  
Cross Sections of Chloroethane-  
d(O), -2-d(1), and -2,2,2-d(3).  
AD-A131 604 \* \* \*  
\*STEUERWALT, MICHAEL \* \* \*  
Block Iterative Methods for  
Elliptic Finite Element Equations.  
AD-A129 150 \* \* \*  
\*STOKOE, KENNETH H., II \* \* \*  
Effects of Rigid Inclusions on Wave  
Propagation.  
AD-A131 366 \* \* \*  
\*STONE, F. GORDON A. \* \* \*  
Synthesis and Characterization of  
Tungsten-Cobalt, -Rhodium and -  
Platinum Compounds and the X-Ray  
Crystal Structures of RhW(mu-  
CC6H4Me-4)(CO)2(PMe3)(eta5-  
C5H5)(eta5-C9H7) and PtW(mu-  
C(C6H4Me-4)C(O)(CO)(PMe3)(eta4-  
C8H12)(eta5-C5H5).  
AD-A128 465 \* \* \*  
A Synthetic Route to Heteronuclear  
Clusters Containing Iridium and  
Rhodium: X-Ray Crystal Structures  
of (IrO53(u-H)2(u-C1)(CO)12) and  
(Ir2Rh2(u-CO)(u3-CO)2(CO)4(n-  
C5Me5)2).  
AD-A128 520 \* \* \*  
\*STONEBRAKER, M. R. \* \* \*

# UNCLASSIFIED

Concurrent Updates and Retrieval in Distributed Database Systems.  
AD-A129 529

\*STRAND, T. C. \* \* \*

Nonlinear Real-Time Optical Signal Processing.  
AD-A129 291

\*STRAUCH, S. MARK \* \* \*

The Electrophysiologic Mechanisms of Halogenated Alkane Arrhythmogenesis.  
AD-A128 424

\*STRONG, R. L. \* \* \*

Absorbate Structure Modeling Based on Electron Energy Loss Spectroscopy and Lattice Dynamical Calculations. Application to O/A1(111).  
AD-A128 464

\*SUDDHIPRAKARN, CHAIRAT \* \* \*

Effects of Rigid Inclusions on Wave Propagation.  
AD-A131 366

\*SUMMERFIELD, M. \* \* \*

Catalytic Combustion for Advanced Jet Engines.  
AD-B075 283L

\*SUTTON, GEORGE H. \* \* \*

Enhance and Test the Remote Seismic Terminal. Volume I.  
AD-A128 375

\* \* \*

The Use of Regional Seismic Waves for Discrimination and Yield Determination. Volume II.  
AD-A128 376

\*TAM, ANDREW C. \* \* \*

Spatial Dependence of the Strong Optogalvanic Effects Due to Metastable Quenching in a DC Helium Discharge.  
AD-A129 248

\*TANAKA, YOSHIO \* \* \*

Radiation and Laser Potential of Homo and Heteronuclear Rare-Gas Diatomic Molecules.  
AD-A130 093

\*TANGUAY, A. R., JR. \* \* \*

Nonlinear Real-Time Optical Signal Processing.  
AD-A129 291

\*TAYLOR, R. E. \* \* \*

Specific Heat of Octahydro - 1,3,5,7 - Tetranitro - 1,3,5,7 - Tetrazocine (HMX).  
AD-A128 442

\* \* \*

Thermophysical Property Determinations Using Transient Techniques.  
AD-A130 707

\*TAYLOR, ROBERT LEE \* \* \*

Convergence of Weighted Sums of Arrays of Random Elements in Type p Spaces with Application to Density Estimation.  
AD-A128 452

\*TEJWANI, YOGENDRA \* \* \*

Adaptive Hybrid Picture Coding.  
AD-A129 221

\*TOBITA, Y. \* \* \*

Influence of Fabric on Liquefaction and Densification Potential of Cohesionless Sand.  
AD-A130 949

\*TSAI, CHEN S. \* \* \*

Thin-Film Guided-Wave Devices for Integrated/Fiber Optic Signal Processing and Communications.  
AD-A129 582

\*TSAKNAKIS, HARALAMPOS \* \* \*

Robust Prediction and Interpolation for Vector Stationary Processes.  
AD-A130 973

\* \* \*

Robust Linear Filtering for Multivariable Stationary Time Series.  
AD-A129 209

\*TSEN, FU-SHIANG PETER \* \* \*

Stability in Linear Delay Equations.  
AD-A129 264

\*TSUNODA, ROLAND T. \* \* \*

Latitudinal Variations of Auroral-Zone Ionization Distribution.  
AD-A128 612

\*TUNG, CHEM-HO \* \* \*

Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization.  
AD-A128 671

\*TURRO, NICHOLAS J. \* \* \*

Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization.  
AD-A128 671

\* \* \*

Micellar Systems as 'Supercages' for Reactions of Geminate Radical Pairs. Magnetic Effects.  
AD-A130 157

\*TUTEUR, FRANZ B. \* \* \*

PERSONAL AUTHOR INDEX-25  
UNCLASSIFIED EVN35A

STR-TUT

# UNCLASSIFIED

Analysis of the Howells-Applebaum Algorithm in the Presence of Moving Interference. The Use of Lattice Filters in Adaptive Array Processors. Stability Analysis of LMS Adaptive Filters. Adaptive Array Processors with Moving Interference.  
AD-A130 218

\*ULRICH, DONALD \* \* \*  
An Approach to Molecular Composites.  
AD-A130 192

\*VACCARO, PATRICK H. \* \* \*  
Electric Dipole Moments of Excited Vibrational Levels in the X1A1 State of Formaldehyde by Stimulated Emission Spectroscopy.  
AD-A129 147

\*VAN DIJK, C. \* \* \*  
Spatial and Temporal Studies of a Glow Discharge.  
AD-A128 461

\*VERBER, C. M. \* \* \*  
Optical Waveguide Spatial Filters.  
AD-A129 746

\*VERMA, G. R. \* \* \*  
Stability of Compressible Wake and Jet Flows.  
AD-A128 414

\*VERSTEGEN, M. \* \* \*  
Advanced Training Techniques Using Computer Generated Imagery.  
AD-A129 215

\*VICKREY, JAMES F. \* \* \*  
Latitudinal Variations of Auroral-Zone Ionization Distribution.

AD-A128 612

\*WADSWORTH, CYNTHIA L. \* \* \*  
Isomers of (PhMeSi)6 and (PhMeSi)5.  
AD-A128 428

\*WALKER, RAYMOND W. \* \* \*  
Arrhenius Parameters of Elementary Reactions Involved in the Oxidation of Neopentane.  
D-A129 192

\* \* \*  
The Decomposition of 2,2,3,3-Tetramethylbutane in KCl- and B2O3-Coated Vessels in the Presence of Oxygen.  
AD-A130 683

\*WALKER, WILLIAM \* \* \*  
Radiation and Laser Potential of Homo and Heteronuclear Rare-Gas Diatomic Molecules.  
AD-A130 093

\*WALKUP, JOHN F. \* \* \*  
Space-Variant Optical Systems.  
AD-A130 096

\*WALLACE, TERRY C. \* \* \*  
Evidence of Tectonic Release from Underground Nuclear Explosions in Long-Period P Waves.  
AD-A129 290

\*WANG, A. S. D. \* \* \*  
Fracture Mechanics of Transverse Cracks and Edge Delamination in Graphite-Epoxy Composite Laminates.  
AD-A129 313

\* \* \*  
Fracture Mechanics of Sub-Laminate Cracks.  
AD-A130 782

\*WANG, HARRY T. M.

\* \* \*  
Nuclear Magnetic Resonance Gyroscope.  
AD-A130 102

\*WARNER, THOMAS T. \* \* \*  
Analysis and Prediction of Severe Storm Environment.  
AD-A129 247

\*WEBER, J. \* \* \*  
Coherent Scattering of Light into High Frequency Radiowaves.  
AD-A130 691

\* \* \*  
New Method in Elementary Particle Detection.  
AD-A131 238

\*WEED, GREGORY C. \* \* \*  
Micellar Systems as 'Supercages' for Reactions of Geminate Radical Pairs. Magnetic Effects.  
AD-A130 157

\*WEI, R. P. \* \* \*  
Mechanisms of Corrosion Fatigue in High Strength I/M (Ingot Metallurgy) and P/M (Powder Metallurgy) Aluminum Alloys.  
AD-A130 041

\*WEISCHDEL, RALPH M. \* \* \*  
Design of a System That Understands Informal Specifications.  
AD-A131 479

\* \* \*  
Mapping between Semantic Representations Using Horn Clauses.  
AD-A131 531

\*WELSH, W. J. \* \* \*  
Configurational Characteristics of the Polysulfides. 3. Dipole Moments of Poly(trimethylene sulfide) and

PERSONAL AUTHOR INDEX-26  
UNCLASSIFIED EVN35A

ULR-WEL

# UNCLASSIFIED

Comparisons between some  
Polysulfides and the Corresponding  
Polyoxides.  
AD-A128 159

Configurational Characteristics of  
the Polysulfides. 2. Dipole Moments  
and Gauche Effects in Poly (1,3-  
dithiocane).  
AD-A128 160

Theoretical Studies of Relatively  
Rigid Polymer Chains.  
AD-A128 421

\*WEST, BRUCE J. \* \* \*  
Scattering of Waves by  
Irregularities in Periodic Discrete  
Lattice Spaces. 2. Calculations.  
AD-A130 665

\*WEST, ROBERT \* \* \*  
Isomers of (PhMeSi)6 and (PhMeSi)5,  
AD-A128 428

Chemical Reactions of  
Tetramesityldisilene,  
AD-A128 457

Organosilicon Rotanes. Synthesis  
and an Unexpected Rearrangement.  
AD-A128 466

\*WHEELER, ROBERT L. \* \* \*  
An Example of Boundary Layer in  
Delay Equations.  
AD-A129 144

\*WILL, JAMES A. \* \* \*  
A Modification for Preparing the  
Chronic Lung-Lymph Fistula in  
Sheep.  
AD-A129 518

Lung Metabolism, Function, and  
Morphology during Hyperoxic and  
Hyperbaric Exposure.

AD-A129 661  
Neuroendocrine and Metabolic  
Factors in Pulmonary Circulatory  
Control.  
AD-A129 685

\*WILLS, R. R. \* \* \*  
Hot Isostatic Pressing of Ceramic  
Powder Compacts.  
AD-A131 514

\*WINEFORDNER, J. D. \* \* \*  
Spatial and Temporal Studies of a  
Glow Discharge.  
AD-A128 461

\* \* \*  
Versatile, High Resolution  
Continuum Source Atomic Absorption  
Flame Spectrometer with Resonance  
Flame Detector,  
AD-A128 538

\* \* \*  
Evaluation of Diffracted Stimulated  
Emission as a Potential Analytical  
Measurement Technique.  
AD-A131 590

\*WINOGRAD, N. \* \* \*  
Theoretical Aspects of Cluster  
Formation by keV Bombardment of  
Rare-Gas Solids.  
AD-A131 283

\*WITTMAN, P. K. \* \* \*  
Evaluation of Diffracted Stimulated  
Emission as a Potential Analytical  
Measurement Technique.  
AD-A131 590

\*WOLFE, JAMES P. \* \* \*  
Measurement of High Mobilities and  
Strain Confinement of Long-Lived  
Free Excitations in Cu2O.  
AD-A128 486

\*WOLFF, PETER A. \* \* \*  
Infrared Nonlinear Optics,  
AD-A129 993

\*WONG, E. \* \* \*  
Concurrent Updates and Retrieval in  
Distributed Database Systems.  
AD-A129 529

\*YAAKOBI, BARUKH \* \* \*  
Study of a Nuclear Gamma-Ray Laser.  
AD-A129 571

\*YANG, V. \* \* \*  
Linear Theory of Pressure  
Oscillations in Liquid Fueled  
Ramjet Engines.  
AD-A130 882

\* \* \*  
Linear Theory of Pressure  
Oscillations in Liquid-Fueled  
Ramjet Engines,  
AD-A131 610

\*YARKONY, DAVID R. \* \* \*  
On the Reaction Mg + N20 Yields MgO  
+ N2,  
AD-A131 605

\*YEH, HSI-MAN \* \* \*  
Synthesis of Optimal Digital  
Controller for Continuous-Data  
Model-Following.  
AD-A129 288

\*YOUNG, J. F. \* \* \*  
Research Studies on Radiative  
Collisional Processes.  
AD-A128 533

\*YU, FRANCIS T. S. \* \* \*  
White-Light Optical Information  
Processing and Holography.

UNCLASSIFIED

AD-A129 682

\*YU, KAI-BOR

\* \* \*

Effects of Ongoing EEG on Latency  
Measurements of Evoked Potentials,  
AD-A129 520

\*YUEN, S. Y.

\* \* \*

Third-Order Optical Nonlinearity  
Induced by Effective Mass Gradient  
in Heterostructures,  
AD-A130 018

\*ZARE, R. N.

\* \* \*

Multiphoton Ionization  
Photoelectron Spectroscopy: A New  
Method for Determining Vibrational  
Structure of Molecular Ions,  
AD-A128 448

\*ZHANG, XING-HUA

\* \* \*

Organosilicon Rotanes. Synthesis  
and an Unexpected Rearrangement,  
AD-A128 466

PERSONAL AUTHOR INDEX-28  
UNCLASSIFIED EVN35A

YU, -ZHA

## ABSTRACTS



UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD 8075 283L 21/5

PRINCETON COMBUSTION RESEARCH LABS INC NJ

Catalytic Combustion for Advanced Jet Engines.

(U)

DESCRIPTIVE NOTE: Final rept. Mar-Oct 82,

NOV 82 74P Bruno, C.; Ingram, L. S.;

Messina, N. A.; Summerfield, M.;

REPT. NO. PCRL-FR-82-005

CONTRACT: F49620-82-C-0060

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR-83-0609

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Nov 82. Other requests for this document must be referred to USAF, AFSC, Air Force Office of Scientific Research, Attn: XOTD, Bolling AFB, DC 20332.

SUPPLEMENTARY NOTE: Original contains color plates: All

DTIC reproductions will be in black and white.

ABSTRACT: A catalytic combustion system intended as a substitute for the conventional type of combustion system in a gas turbine (which involves a head-end primary hot flame followed by temperature reduction by air dilution) has to offer at least the same level of performance and, in addition, some distinct advantages. (Author)

(U)

DESCRIPTORS: \*Combustors, \*Jet engines, \*Catalysts, Gas turbines, Substrates, Platinum, Military applications, Thermodynamics, Efficiency, Performance (Engineering), Optimization, Emission control

(U)

IDENTIFIERS: \*Catalytic combustion, Platinum catalyst, Pattern factor, Catalytic burners, PE61102F, WUAFOSR2308A2

(U)

AD-8075 283L

UNCLASSIFIED

PAGE

1

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 618 11/3 11/6

PITTSBURGH UNIV PA DEPT OF METALLURGICAL AND MATERIALS ENGINEERING

Fundamental Research Directed to Advanced High Temperature Coating Systems Beyond the Current State-of-the-Art Systems.

(U)

DESCRIPTIVE NOTE: Annual rept. no. 3, 1 Jan-31 Dec 82,

JUN 83 51P Meier, G. H.; Pettit, F.

S.;

CONTRACT: AFOSR-80-0089

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0723

UNCLASSIFIED REPORT

ABSTRACT: The oxidation in air of nickel-silicon alloys with compositions extending from 5 to 20 weight-silicon have been studied over the temperature interval between 900 and 1100 degs C. In the case of alloys with less than 20% silicon, the silicon is not oxidized internally nevertheless the rates of oxidation are greater than those for alloys upon which alumina scales are formed. The alloy with 20% silicon exhibited oxidation rates less than those associated with alumina scales under similar conditions. The scales which developed upon the Ni-20 silicon alloy are in the process of being identified. It appears that silicon rich coatings have the potential of being used in place of present state-of-the-art MCrAlY coatings. The adherence of alumina formed on alloys of Ni-20Cr-10Al and Co-20Cr-10Al with yttrium or hafnium has been studied by using cyclic oxidation tests, acoustic emission measurements and by measuring the load required to pull scales from substrates. These studies have shown that the following parameters affect alumina scale adherence: oxygen active element type and concentration; base alloy composition (e.g. nickel-versus cobalt-base); alloy surface condition; specimen cooling rate, and exposure time of specimen to oxidation conditions. The acoustic emission technique of studying damage in alumina scales on alloys appears to provide a means of nondestructively determining the useful lives of coatings on alloys that remain after use under service conditions. (Author)

(U)

(U)

DESCRIPTORS: \*Coatings, \*Metal coatings, Nickel

AD-A131 618

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 616 8/13

NORTHWESTERN UNIV EVANSTON IL

Inherent Anisotropy and Shear Strength of  
Assembly of Oval Cross-Sectional Rods.

(U)

SEP 82 13P Konishi,Junichi ;Oda,  
Masanobu ;Nemat-Nasser,Stavouche ;  
CONTRACT: AFOSR 80-0017, NSF-CME80-07764  
PROJ: 2307  
TASK: C1  
MONITOR: AFOSR TR-83-0654

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Deformation and Failure of  
Granular Materials, p403-412, 31 Aug-3 Sep 82.  
Reprint: Inherent Anisotropy and Shear Strength of  
Assembly of Oval Cross-Sectional Rods.

DESCRIPTORS: \*Soil models, \*Microstructure,  
\*Photoelasticity, \*Anisotropy, Shear strength,  
Deformation, Loads(Forces), Sand, Granules,  
Soil mechanics, Reprints  
IDENTIFIERS: PE61102F, WUAFOSR2307C1

(U)  
(U)

AD-A131 616

UNCLASSIFIED

PAGE

2

AD-A131 615

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 615 9/2 13/8

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL  
ENGINEERING

Parallel Processing for Computer Vision.

(U)

MAY 82 9P Delp,Edward J. ;Mudge,T.  
N. ;Siegel,Leah J. ;Siegel,H. J. ;  
CONTRACT: AFOSR-78-3581, NSF-ECS79-09016  
PROJ: 2304  
TASK: A2  
MONITOR: AFOSR TR-83-0670

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Society of Photo-Optical  
Instrumentation Engineers, v336 7p May 82.  
Reprint: Parallel Processing for Computer Vision.

DESCRIPTORS: \*Robotics, \*Visual perception,  
\*Parallel processing, Automata, Industrial  
production, Optical processing, Algorithms,  
Computer programming, Reprints  
IDENTIFIERS: \*Computer vision, PE61102F,  
WUAFOSR2304A2

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 610 21/2 20/4 21/5

CALIFORNIA INST OF TECH PASADENA

Linear Theory of Pressure Oscillations in  
Liquid-Fueled Ramjet Engines.

(U)

JAN 83 16P Yang, V. ; Cullick, F. E. C.

CONTRACT: AFOSR-80-0265

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR-83-0649

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A130 882. Pub. in  
Proceedings of the AIAA Aerospace Sciences Meeting  
(21st), pp 1-13, 10-13 Jan 83.  
Reprint: Linear Theory of Pressure Oscillations in  
Liquid-Fueled Ramjet Engines.

DESCRIPTORS: \*Ramjet engines, \*Combustion,  
Pressure distribution, Oscillation, Flow fields,  
Combustion stability, Pressure, Steady flow,  
Ramjet inlets, High velocity, Diffusers, Shock  
waves, Acoustic waves, Interactions, Linear  
systems

(U)

IDENTIFIERS: Dump combustors, Liquid fuel ramjets,  
PEG1102F, WUAFOSR2308A2

(U)

AD-A131 610

UNCLASSIFIED

PAGE

3

AD-A131 607

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 607 7/4

CALIFORNIA UNIV SANTA BARBARA DEPT OF CHEMISTRY

Structure and Composition of Adsorbed Layers  
Formed by Sequential Exposure of Pt(100) and  
Pt(111) to Pairs of Compounds: Solvents and  
Electrolytic Substances,

(U)

82 16P Katekaru, James Y. ; Garwood,  
Gerald A. , Jr. ; Hershberger, John F. ; Hubbard,  
Arthur T. ;

CONTRACT: AFOSR-81-0149

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0699

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Surface Science, v121  
p396-410 1982.

Reprint: Structure and Composition of Adsorbed  
Layers Formed by Sequential Exposure of Pt(100)  
and Pt(111) to Pairs of Compounds: Solvents and  
Electrolytic Substances.

DESCRIPTORS: \*Platinum, \*Electrodes,

\*Electrochemistry, Surface reactions, Absorption,  
Molecular structure, Chemical reactions, Solvents,  
Electrolytes, Reprints

(U)

IDENTIFIERS: PEG1102F, WUAFOSR2303A1

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 606 11/6 20/2 20/11

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

Information Studies in Workable  
Superalloys.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 79-31 May 83.

MAY 83 118P Gianneli, A. F. ;

REPT. NO. UTRC/R83-916100-1

CONTRACT: F43620-82-C-0028

PROJ: 2306

TASK: A1

MONITOR: AFOSR TR-83-0724

## UNCLASSIFIED REPORT

ABSTRACT: A three year workability study of nickel-base superalloys has been completed. The objective was to study the high strain plastic flow behavior of high strength superalloys in the form of single crystals, rapidly solidified ingots and consolidated powder particles. The single crystal alloy studied was PWA 1444 (similar to Mar-M200) which had previously been well characterized at low strains. The flow characteristics of this alloy have now been documented out to 20% strain as a function of crystal orientation. The low to intermediate temperature flow stress has been measured after forming. Remarkable strain hardening has been obtained at low strains for high modulus crystals worked below the solvus temperature. Rapidly solidified and cooled ingots were made by arc melting or electron beam skull melting or induction melting and then 'drip melting' into a cold copper mold. The compositions and heat treatment were tailored to promote workability. Some of these buttons were heavily deformed in uniaxial compression under isothermal conditions below the gamma prime solvus temperature, and several were deformed in the single phase gamma region. High strains were achieved under conditions of constant displacement rate, true strain rate or energy input rate. (U)

DESCRIPTORS: \*Superalloys, \*Single crystals, \*Plastic deformation, Strain(Mechanics), Strain rate, Plastic flow, Solidification, Quick reaction, Grain size, Grain structures(Metallurgy), Powder metallurgy, Nickel alloy Inconel, Strength(Mechanics), Hardening, Dynamics, Crystallization, Heat treatment, IDENTIFIERS: WUAFOSR2306A1, PE61102F

AD-A131 606

## UNCLASSIFIED

PAGE

4

AD-A131 605

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 605 7/4

JOHNS HOPKINS UNIV BALTIMORE MD DEPT OF CHEMISTRY

On the Reaction Mg + N20 Yields MgO +  
N2,

(U)

JUN 83 12P Yarkony, David R. ;

CONTRACT: AFOSR-79-0073

PROJ: 2303

TASK: B1

MONITOR: AFOSR TR-83-0702

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, v78 n11 p6763-6772, 1 Jun 83.  
Reprint: On the Reaction Mg N20 Yields MgO N2.

DESCRIPTORS: \*Chemical reactions, \*Electron energy, \*Energy transfer, \*Metal compounds, Magnesium oxides, Oxidation, Molecular energy levels, Nitrogen compounds, Reprints  
IDENTIFIERS: PE61102F, WUAFOSR2303B1

(U)

(U)

UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 604

7/4

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CHEMISTRY

Infrared Multiphoton Decomposition and Energy-Dependent Absorption Cross Sections of Chloroethane-d(0), -2-d(1), and -2,2,2-d(3),

(U)

MAY 83 14P Francisco, Joseph S. ; Qingshi, Zhu ; Steinfeld, J. I. ;

CONTRACT: AFOSR-78-3725

PROJ: 2303

TASK: B1

MONITOR: AFOSR TR-83-0703

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, V78 n9 p5339-5350, 1 May 83. Reprint: Infrared Multiphoton Decomposition and Energy-Dependent Absorption Cross Sections of Chloroethane-d(0) -2-d(1), and -2,2,2-d(3).

DESCRIPTORS: \*Chloroethanes, \*Photochemical reactions, \*Chemical dissociation, Kinetics, Infrared radiation, Excitation, Photon beams, Cross sections, Mathematical models, Reprints IDENTIFIERS: WUAFOSR2303B1, PE61102F

(U)  
(U)

AD-A131 604

UNCLASSIFIED

PAGE

5

AD-A131 601

UNCLASSIFIED

EVN35A

UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 601 20/8 20/8

AVCO EVERETT RESEARCH LAB INC EVERETT MA

Experimental Study of Dissociative Attachment in Optically-Pumped Lithium Molecules.

(U)

DESCRIPTIVE NOTE: Final rept. 1 May 82-30 Apr 83, MAY 83 72P McGeoch, Malcolm W. ;

Schlier, Robert E. ;

CONTRACT: F49620-82-C-0051

PROJ: 2301

TASK: A7

MONITOR: AFOSR TR-83-0725

UNCLASSIFIED REPORT

ABSTRACT: Details are presented of an experimental study which has as its goal the observation of lithium negative ions by the process of dissociative attachment in optically-pumped lithium dimer molecules. A description is given of a new lithium supersonic beam apparatus with a slit nozzle and gravitational recirculation of the molten lithium. The source operates up to 900 degrees C and yields a lithium density of  $3/1 \times 10$  to the 14th power cm at 10 cm downstream from the slit. The beam density is modelled as a function of spatial coordinates. Two- and three-step photoionization of lithium dimers and lithium atoms has been performed using multiple, tunable nitrogen-pumped dye lasers. An electron density of up to  $3/10$  to the 10th power cm has been created in the beam.

(U)

DESCRIPTORS: \*Ion beams, \*Optical pumping, \*Lithium, \*Molecules, \*Dye lasers, Electron density, Attachment, Dissociation, Atoms, Melts, Spatial distribution, Nozzles IDENTIFIERS: Lithium supersonic beams, Rotational temperature, WUAFOSR2301A7, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 590 7/4 20/5

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

Evaluation of Diffracted Stimulated Emission  
as a Potential Analytical Measurement  
Technique

(U)

DESCRIPTIVE NOTE: Technical rept.,

J. D. ; 83 3P Wittman, P. K. ; Winefordner,

CONTRACT: F49620-80-C-0005

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0704

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Spectroscopy, v37

n2 p208-209 1983.

Reprint: Evaluation of Diffracted Stimulated  
Emission as a Potential Analytical Measurement  
Technique.DESCRIPTORS: \*Emission spectra, \*Diffraction,  
\*Laser beams, Excitation, Dye lasers, Optical  
instruments, Chemical engineering, Measuring  
instruments

(U)

IDENTIFIERS: Diffracted stimulated emission,

PE61102F, WUAFO5R2303A1

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 584 7/4

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

Response to 'Comment on 'Tunneling alpha  
squared F (omega) as a Function of Composition  
in A15 NbGe', by B. R. Sood.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 2P Kihlstrom, K. E. ; Geballe,

T. H. ;

REPT. NO: GL-3480

CONTRACT: F49620-78-C-0009

PROJ: 2306

TASK: C1

MONITOR: AFOSR TR-83-0638

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review B, v27

n5 p3082, 1 Mar 83.

Reprint: Response to 'Comment on 'Tunneling alpha  
squared F (omega) as a Function of Composition in  
A15 NbGe', by B. R. Sood.DESCRIPTORS: \*Niobium compounds, \*Germanium  
compounds, \*Chemical properties,  
Tunneling(Electronics), Softening,  
Stoichiometry, Reprints

(U)

IDENTIFIERS: Mode softening, PE61102F,

(U)

WUAFO5R1206C1

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 572 20/4 12/1

STANFORD UNIV CA DEPT OF MATHEMATICS

Rising Bubbles.

(U)

DESCRIPTIVE NOTE: Progress rept. 16 Mar-31 Dec 82,  
DEC 82 17P Keller, Joseph B. ;

CONTRACT: AFOSR-79-0134

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0676

## UNCLASSIFIED REPORT

ABSTRACT: This progress report lists publications supported by AFOSR through March 16, 1982 - December 31, 1982.

(U)

DESCRIPTORS: Bubbles, \*Applied mathematics, Bibliographies, Diffusion, Acoustic properties, Sound transmission, Turbulence, Viscosity.

(U)

Waves, Boltzmann equation, Transformations(Mathematics), Fluid dynamics

(U)

IDENTIFIERS: WUAFOSR2304A4, PE61102F

AD A131 572

UNCLASSIFIED

PAGE

7

AD A131 565

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 565 20/11 19/1

SRI INTERNATIONAL MENLO PARK CA POULTER LAB

Response of Cracks in Structural Materials to Short Pulse Loads.

(U)

83 19P Homma, H. ; Shockey, D. A. ; Murayama, Y. ;

CONTRACT: F49620-77-C-0059

PROJ: 2306

TASK: A1

MONITOR: AFOSR TR-83-0679

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Mechanics and Physics of Solids, v31 n3 p261-279 1983.  
Reprint: Response of Cracks in Structural Materials to Short Pulse Loads.

DESCRIPTORS: \*Cracks, \*Crack propagation, \*Ammunition, \*pulse trains, Loads(Forces), Fatigue(Mechanics), Stress strain relations, Pulse amplitude, Pulse amplitude modulation, Fracture(Mechanics), Structural mechanics, Finite element analysis, Reprints  
IDENTIFIERS: \*Feed mechanisms, PE61102F, WUAFOSR2306A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 556 7/4

OREGON UNIV EUGENE

Deexcitation of Light Li-Like Ions in the  
1s2s2p State.

(U)

JAN 83 5P Chen, Mau Hsiung ; Craseman,

Bernd ; Mark, Hans ;

CONTRACT: AFOSR-79-0026

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0626

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review A, v27

n1 544-547 Jan 83.

Reprint: Deexcitation of Light Li-Like Ions in

t. 1s2s2p State.

DESCRIPTORS: Ions, \*Atomic energy levels,

\*Emission spectra, Perturbation theory, Auger

electrons, X ray spectra, Electron transitions,

Reprints

IDENTIFIERS: WUAFOSR2301A4, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 554 7/4 20/6 11/2

CALIFORNIA UNIV LOS ANGELES DEPT OF PHYSICS

Characterization of Infrared Optical  
Properties of Transparent Materials.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Aug 78-31

Mar 83,

MAR 83 28P Braunstein, Rubin ;

CONTRACT: AFOSR-78-3665

PROJ: 2306

TASK: C2

MONITOR: AFOSR TR-83-0629

UNCLASSIFIED REPORT

ABSTRACT: Chemical and structural imperfections which occur in highly transparent insulators and semiconductors were studied by a range of electronmagnetic and electronic techniques. These utilized infrared wavelength modulation, high contrast Raman and Brillouin scattering and photoinduced transients spectroscopy techniques. The spectral distribution of the absorption in the spectral region from 2.5-12 gamma was measured by infrared wavelength modulation techniques on:

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 553 20/6 20/4

CALIFORNIA INST OF TECH PASADENA

Chemically Reacting Turbulent Shear Layers.

(U)

DESCRIPTIVE NOTE: Interim rept.,

JAN 83 5P Koochesfahani, M. M. ;

Dimotakis, P. E. ; Broadwell, J. E. ;

CONTRACT: F49620-79 C 0159

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR 83-0650

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the AIAA Aerospace Sciences Meeting (21st) 10-13 Jan 83, Reno, NV

ABSTRACT: An experimental investigation of entrainment, mixing and chemical reactions in a plane shear layer has been performed using laser induced fluorescence techniques. Results indicate that the reactants mix on a molecular level and react at a composition that is nearly uniform across the width of the layer. The composition of the mixed fluid is found to be asymmetric, with an excess of high speed fluid, suggesting that entrainment into the shear layer is asymmetric. These results are at variance with predictions of models based on gradient transport and eddy diffusivity. (Author)

(U)

DESCRIPTORS: \*Lasers, \*Induced fluorescence, \*Chemical reactions, \*Layers, \*Turbulent flow, Shear properties, Flow visualization, Gradients, Eddies (Fluid Mechanics), Fluids, Mixing

(U)

IDENTIFIERS: Plane shear layer, Mixing entrainment, Gradient transport, Eddy diffusivity.

(U)

WUAFOSR2308A2, PE61102F

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN25A

AD-A131 546 20/8

LITTON SYSTEMS INC WOODLAND HILLS CA GUIDANCE AND CONTROL SYSTEMS DIV

Nuclear Moment Alignment, Relaxation and Detection Mechanisms.

(U)

DESCRIPTIVE NOTE: Final technical rept, Mar 82-Feb 83,

MAR 83 95P Nicol, Ann T. ; Lam, Leo ;

Boley, W. ;

REPT. NO: 404720

CONTRACT: F49620-82-C-0047

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0622

UNCLASSIFIED REPORT

ABSTRACT: The reported physics research is part of an overall program to develop a nuclear magnetic resonance gyro that makes use of an optically pumped alkali metal vapor both to align the magnetic moments of the noble gas nuclei and to detect the weak magnetic fields that are generated by these precessing nuclear moments. A model for the distribution of polarization of optically pumped rubidium across a sample cell is developed. Results of the computer modeling are presented graphically for various cells as a function of cell size, incident light intensity, wall type and gas fill. A study of the effect of direct nuclear dipole-dipole interaction on surface relaxation of <sup>129</sup>Xe is reported. Results indicate that the mechanism for <sup>129</sup>Xe nuclear relaxation on surfaces studied is not the direct dipolar interaction and must be attributed to an electron-nucleus interaction. Studies of <sup>129</sup>Xe relaxation on several surface types show an order of magnitude more efficient than silicone treated surfaces for relaxing xenon nuclear spins.

(U)

DESCRIPTORS: \*Gyroscopes, \*Nuclear magnetic resonance, \*Nuclear moments, \*Alignment, Optical pumping, Rubidium, Mathematical models, Theory, Relaxation, Frequency shift, Rare gases, Alkali metals

(U)

IDENTIFIERS: PE61102F, WUAFOSR2301A4

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 531 5-7 9/2

DELAWARE UNIV NEWARK DEPT OF COMPUTER AND INFORMATION SCIENCES

Mapping between Semantic Representations  
Using Horn Clauses.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
JUN 83 10P Walschedol, Ralph M.;  
CONTRACT AFOSR 80 0190  
PROJ: 2304  
TASK: A2  
MONITOR: AFOSR TR-83-0686

UNCLASSIFIED REPORT

ABSTRACT: Even after a unambiguous semantic interpretation has been computed for a sentence in context, there are at least three reasons that a system may map the semantic representation R into another from S: (1) The terms of R, while reflecting the user view, may require deeper understanding, e.g. may require a version S where metaphors have been analyzed; (2) Transformations of R may be more appropriate for the underlying application system, e.g. S may be a more nearly optimal form (these transformations may not be linguistically motivated); (3) Some transformations may depend on non-structural context. Design considerations may favor factoring the processing into two stages, for reasons of understandability or for easier transportability of the components. This paper describes the use of Horn clauses for the three classes of transformations listed above. The transformations are part of a system that converts the English description of a software module into a formal specification, i.e. an abstract data type.

DESCRIPTORS: \*Semantics, Computer programs, Text processing, Natural language, Transformations, Mapping/Transformations)

IDENTIFIERS: Semantic representation, Horn clauses, PE61102F, WUAFOSR2304A2

(U)

(U)

(U)

AD-A131 531

UNCLASSIFIED

PAGE

10

AD-A131 530

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 530 20/14 20/6 7/4

SPECTRON DEVELOPMENT LABS INC SEATTLE WA SEATTLE LAB

Investigation of the Rayleigh Critical Angle  
Phenomenon for the Characterization of Surface  
Properties.

(U)

DESCRIPTIVE NOTE: Final rept. Nov 82-Feb 83 on Phase  
2.  
APR 83 59P Hildebrand, B. P.;  
Fitzpatrick, G. L.; Boland, A. J.;  
REPT. NO. SDL-83-2188-14F  
CONTRACT: F49620-81-C-0040, ARPA Order-4109  
PROJ: 2306  
MONITOR: AFOSR TR-83-0678

UNCLASSIFIED REPORT

ABSTRACT: Rayleigh type acoustic critical angle experiments on a variety of samples ranging from single crystals to polycrystalline alloy and glasses have been performed. Two conclusions can be drawn from this work: (1) simple linear equations of motion, which include anisotropy, suffice for an approximate description of the observations; (2) certain observations at and near the critical angle, involving the production of anomalous harmonics, imply that the nonlinear characteristics of the water, and possibly the solid, cannot be ignored and need further study. Moreover, the new measuring apparatus, using an acoustic lens, has the following desirable features: (a) it allows local measurements of the solid properties to be made, and (b) except for problems associated with phase measurements of the reflected waves, experimental results are essentially consistent with the work of others who used a different experimental approach. We conclude that our goal of using a device in practical flaw imaging work is reasonable and holds promise of being a quantitative flaw imaging technique.

DESCRIPTORS: \*Rayleigh waves, \*Rayleigh scattering, \*Angles, \*Surface properties, Crystals, Alloys, Glass, Anisotropy, Harmonic analysis, Defects(Materials), Elastic properties, Nonlinear analysis

IDENTIFIERS: Critical angles, PE61102F

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 523

12/1

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

Likelihood Ratio Tests on Covariance  
Matrices and Mean Vectors of Complex  
Multivariate Normal Populations and Their  
Applications in Time Series.

(U)

DESCRIPTIVE NOTE: Technical rept.

MAR 83 68P Krishnan, P. R.; Lee, J.

C.; Chang, T. C.;

CONTRACT: F49629-82-K 0001

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83 0692

## UNCLASSIFIED REPORT

ABSTRACT: In this paper, the authors reviewed the literature on computational aspects of the distributions of the likelihood ratio statistics for testing various hypotheses on the covariance matrices and mean vectors of complex multivariate normal populations. Applications of some of these test procedures in the area of inference on multiple time series in the frequency domain are also discussed. In the Appendix, the authors give tables which are useful in implementation of various likelihood ratio test statistics discussed in this paper.

(U)

DESCRIPTORS: \*Probability, \*Ratios, \*Multivariate analysis, \*Population(Mathematics), Covariance, Normal distribution, Vector analysis, Time series analysis, Matrices(Mathematics), Statistical analysis, Tables(Data), Mean

(U)

IDENTIFIERS: Likelihood ratio tests, Covariance matrices, Mean vectors, Complex multivariate analysis, Normal populations, Mean vectors, WUAFOSR2304A5, PE61102F

(U)

AD-A131 523

UNCLASSIFIED

PAGE

11

AD-A131 516

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 516

20/12

7/4

20/6

GEORGIA INST OF TECH ATLANTA SCHOOL OF PHYSICS

Correlation and Collective Modes in Narrow  
Band Materials.

(U)

DESCRIPTIVE NOTE: Interim rept. 1 Oct 81-30 Sep 82,

MAY 83 28P Ribarsky, Martin W.;

CONTRACT: AFOSR-80-0023

PROJ: 2301

TASK: A8

MONITOR: AFOSR TR-83-0631

## UNCLASSIFIED REPORT

ABSTRACT: Correlation and collective modes have been studied for systems with quite localized valence or conduction bands. In particular this research has been concerned with localized electron-hole states and how they contribute with other excitations to the dynamical response of the system. Important aspects studied have been the effects of exciton or exciton-like states on superconducting properties electron energy loss spectra and optical spectra. Initially the system studied has been CuCl for which a tight-binding model was used. The results show that strong effects due to localized excitations of b-band electrons greatly affect the dynamical response and the effective electron interaction. The exciton resonance in the dynamical response is necessary to obtain the appropriate attractive effective electron interaction for superconductivity. The strong localization effects also will affect the loss spectra and optical spectra. Further calculations are planned for CuCl and also for CdS and Cu2O. (Author)

(U)

DESCRIPTORS: \*Narrowband, \*Materials, \*Transition metals, Excitons, Excitation, Holes(Electron deficiencies), Copper compounds, Energy bands, Dielectrics, Dynamics, Optical properties

(U)

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 514 11/2 13/8 12/1

BATTTELLE COLUMBUS LABS OH

Hot Isostatic Pressing of Ceramic Powder Compacts.

(U)

DESCRIPTIVE NOTE: Annual report, 1, Jun 82 Jun 83.

JUN 82 97P WATTS, R. R., MCCOY, J.

K. Markworth A. J. McCoy L. G. ...

Wright L. E. J.

CONTRACT: AFOSR-82-0233

PROD: 2306

TASK: A2

MONITOR: AFOSR TR 83 0003

UNCLASSIFIED REPORT

ABSTRACT: Several techniques contribute to the characterization of powders being HIP. These are particularly related to the kinetics of the process. A study of the kinetics of a reactive sintering, based on determining the grain size distribution, the constitutive equation for grain size development have been applied to the kinetics of changes in pore size, grain size, and the presence of residual gas. A new algorithm for calculating and plotting mechanism maps has been derived. This algorithm uses number of data points needed to construct a complete map be a factor of 30. Initial experiments performed at 1100 C and 102 MPa (15, 100 psi) showed that a very small amount of grain growth occurred. Correlation of the experimental data with the theoretical predictions is quite good; if it is assumed that 1% residual porosity is a result of entrapped gases then excellent agreement between theory and experiment exists. Although the constitutive equations are supposed to be most applicable during the latter stages of densification, good agreement exists throughout the whole densification range.

(U)

DESCRIPTORS: +Ceramic materials, +Isostatic pressing, +Packing density, Powders, Hot pressing, Porosity, Grain size, Diffusion coefficient, Physical properties, Mechanical properties, Theory, Algorithms, Mathematical models

IDENTIFIERS: HIP(Hot Isostatic Pressing), Densification, Alumina, WUAFOSR2306A2,

(U)

(U)

AD-A131 514

UNCLASSIFIED

PAGE

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 510 12/1 9/1

ALPHATECH INC BURLINGTON MA

Sensor Correlation and Data Fusion Theory.

(U)

DESCRIPTIVE NOTE: Final rept 1 May 80-31 Apr 83.

JUN 83 74P Sandell, Nils R., Jr;

REPT. NO. TR-167

CONTRACT: F49620 81 C 0015

PROD: 2304

TASK: A6

MONITOR: AFOSR TR-83-0671

UNCLASSIFIED REPORT

ABSTRACT: This report describes the results obtained during the second year of a program of continuing research in the mathematical problems associated with the analysis and design of Air Force sensor correlation and data fusion systems. These systems play a vital role in the command and control process, but there presently exists no systematic and quantitative methodology for their analysis and design. In the first year of research, ALPHATECH investigated an important problem, the distributed detection problem associated with determining the presence or absence of targets from a collection of distributed sensors. In the second year of research, ALPHATECH has obtained novel, exact expressions for the probability density functions of the local log likelihood ratios, and has used these expressions to generate an extensive set of design curves. In the third year of research, which is presently on-going, being investigated is another important class of problems, namely, sequential distributed detection problems.

(U)

(Author)

DESCRIPTORS: +Numerical methods and procedures, +Detection, +Signal processing, +Waveforms, Target detection, Gaussian noise, Command and control systems, Air force research, Surveillance, Stochastic processes, Signal to noise ratio, Correlation, Probability distribution functions, White noise

IDENTIFIERS: WUAFOSR2304A6, PE61102F

(U)

(U)

AD-A131 510

UNCLASSIFIED

12

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 505 20/9 12/1

BOSTON COLL CHESTNUT HILL MA

Plasma Response Functions, Fluctuation-  
Dissipation Relations and the Velocity-  
Average-Approximation. (U)

OCT 82 21P Golden, K. I.; Kalman, G. ;  
CONTRACT: AFOSR-81-0091, AFOSR-78-2960  
PROJ: 2301  
TASK: A8  
MONITOR: AFOSR TR-83-0731

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Annals of Physics, v143 n1  
p160-178, 1 Oct 82.  
Reprint: Plasma Response Functions, Fluctuation-  
Dissipation Relations and the Velocity-Average-  
Approximation.

DESCRIPTORS: \*Plasmas(Physics), \*Response,  
\*Functions(Mathematics), Dielectrics,  
Distribution functions, Correlation, Variations,  
Dissipation, Velocity, Reprints (U)  
IDENTIFIERS: WJAFOSR2301A8, PE61102F (U)

AD-A131 505

UNCLASSIFIED

PAGE

13

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 498 12/1 17/5

LOUISIANA STATE UNIV BATON ROUGE REMOTE SENSING AND IMAGE  
PROCESSING LAB

A Study of Texture Analysis Algorithms. (U)

DESCRIPTIVE NOTE: Final technical rept. 1 Mar 79-31  
Aug 82.  
FEB 83 76P Harlow, Charles A. ; Connors,  
Richard W. ;  
CONTRACT: AFOSR-81-0112  
PROJ: 2304  
TASK: A2  
MONITOR: AFOSR TR-83-0626

## UNCLASSIFIED REPORT

ABSTRACT: This is the final report for the Air  
Force Office of Scientific Research grant  
entitled 'A Study of Texture Analysis  
Algorithms'. As such this report attempts to  
provide an overview of the research that was  
performed and to provide a chronology of the events  
which precipitated the various studies conducted.  
The research described ranges from developing a  
theoretical comparison method for evaluating the  
innate abilities of texture analysis algorithms to a  
formal mathematical method for defining texture  
measures. The desire was to develop improved  
texture analysis methods through a systematic  
theoretical development process. the goal was to  
create a texture analysis algorithm which could match  
a level of human perception. The studies described  
include a comparison of some texture analysis  
algorithms, the development of a structural texture  
analyzer based on statistical methods, the  
examination of texture pairs which are counter  
examples to the Julesz conjecture, the development  
of an image segmentation method based on texture  
analysis methods, the development of a target  
recognition strategy based on texture methods, and  
finally a formal mathematical procedure for defining  
texture measures. (Author) (U)

DESCRIPTORS: \*Algorithms, \*Feasibility studies,  
\*Target recognition, \*Texture, Human factors,  
engineering, Mathematical analysis, Measurement,  
Methodology, Theory, Perception, Image  
processing, Target detection, Visual perception  
IDENTIFIERS: Texture analysis, Julesz conjecture,  
Human perception, PE61102F, (U)  
AD-A131 498 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 497 15/5 5/1

ROCHESTER UNIV NY GRADUATE SCHOOL OF MANAGEMENT

Parts and Service Demand Distribution  
Generated by Primary Production.

(U)

DESCRIPTIVE NOTE: Technical rept.,

OCT 82 25P Kellison, Julian ; Kubat, Peter

REPT. NO. WP-QM8216

CONTRACT: AFOSR-79-0043

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0672

## UNCLASSIFIED REPORT

ABSTRACT: Most commercial and military systems subject to failure have an initial period of growth with uncertain time dependent growth rate. Prediction of spare parts demand and service personnel demand is correspondingly uncertain and exsistant statistical tools are inadequate for the adaptive ad hoc planning needed. In our model, systems subject to failure enter into use at the epochs of a time-inhomogeneous Poisson process of rate  $\lambda(t)$ . A component or module of each system in use has constant failure rate  $\mu$  and generates demand for parts and service. The distribution of the cumulative failures  $N(t)$  is obtained. Numerical methods and the asymptotic distribution for large  $t$  are described.

(U)

DESCRIPTORS: \*Spare parts, \*Inventory control, \*Mathematical models, \*Military equipment, \*Commercial equipment, Military planning, Industrial production, Resource management, Logistics support, Operational effectiveness, Mathematical prediction, Poisson equation, Numerical methods and procedures, Statistical processes, Statistical data

IDENTIFIERS: PE61102F, WUAFOSR2304A5

(U)

AD-A131 497

UNCLASSIFIED

PAGE

14

AD-A131 495

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 495 9/2 5/2

CARNEGIE INST OF TECH PITTSBURGH PA DEPT OF COMPUTER SCIENCE

\*flexible Parsing.

(U)

DESCRIPTIVE NOTE: Final technical rept. 1 Jul 81-30

Jun 82, 82 16P Hayes, Philip J. ;

CONTRACT: F49620-79-C-0143

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0667

## UNCLASSIFIED REPORT

ABSTRACT: When people use language spontaneously, they often do not adhere strictly to commonly accepted standards of grammaticality. The primary objective of this project is to develop flexible computer parsing techniques which can deal with the various kinds of ungrammaticalities that arise, both on the lexical and the phrase level. (Author)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 481 9/2

FLORIDA A AND M UNIV TALLAHASSEE DEPT OF DATA PROCESSING

Development of a Text-Editor Based Relational Data Base Management System.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jun-31 Aug 81,  
 AUG 81 39P Mason, Thomas W. ;  
 CONTRACT: AFOSR-81-0131  
 PROJ: 2304  
 TASK: A2  
 MONITOR: AFOSR TR-83-0665

## UNCLASSIFIED REPORT

ABSTRACT: Database management systems have historically been the domain of large mainframes. However, the popularity of mini and micro-computers has spurred the development of database systems appropriate for those devices. Concurrently, database systems design is turning away from traditional hierarchic and CODASYL models to embrace the conceptually simpler relational database approach (1,2,3,4). The relational database approach views data as being in tables. The entries form the rows and are called tuples. The columns are called attributes. Simple selection commands are provided to search for entries with attributes of a given value. Other commands allow the extraction of a subset of entries (found by the selection commands) and the incorporation of that subset with others. This approach is not as efficient as the traditional model in its implementation but offers far greater flexibility in the incorporation of data and the ability to 'explore' the data base. This report documents the attempt to develop a relational database management system for the Harris Minicomputer at Florida A&M University.

DESCRIPTORS: \*Data bases, \*Minicomputers, Systems (U)

engineering, Tables(Data), Data processing, Information retrieval, Data storage systems, Information systems, Man computer interface, Searching, Selection

(U)

IDENTIFIERS: Data base management systems, Relational data base management systems, Text editing, PE61102F, WUAFOSR2304A2

(U)

AD-A131 481

## UNCLASSIFIED

PAGE

15

AD-A131 480

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 480 9/1 20/8

CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES

Computation of Counting Distributions Arising from a Single-Stage Multiplicative Process.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
 MAY 83 54P Helstrom, Carl W. ; Rice,  
 Stephen O. ;  
 CONTRACT: AFOSR-82-0343  
 PROJ: 2304  
 TASK: A5  
 MONITOR: AFOSR TR-83-0677

## UNCLASSIFIED REPORT

ABSTRACT: The cumulative distribution of the number of secondary electrons in a single-stage photomultiplier is calculated by numerically integrating the inversion integral for its probability generating function along a suitably chosen contour. A residue series applicable in certain cases is also presented. Saddlepoint approximations to the contour integral are described, which are the more accurate, the greater the numbers of secondaries. Recurrent relations are developed for computing values of the distribution for purposes of comparison. Computation of the Neyman Type-A distribution is treated as a limiting case.

(U)

DESCRIPTORS: \*Photomultiplier tubes, \*Electrons, \*Secondary, \*Counting methods, Distribution functions, Computations, Integrals, Approximation(Mathematics), Accuracy, Value, Comparison, Probability

(U)

IDENTIFIERS: Cumulative distribution, Saddlepoints, Type A distribution, PE61102F, WUAFOSR2304A5

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 479 9/2 5/2

DELAWARE UNIV NEWARK DEPT OF COMPUTEF AND INFORMATION SCIENCES

Design of a System That Understands Informal Specifications.

DESCRIPTIVE NOTE: Interim technical rept..

APR 83 17P Weischedel, Ralph M. ;

Chester, Daniel L. ;

CONTRACT: AFOSR-80-0190

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0675

## UNCLASSIFIED REPORT

ABSTRACT: This paper investigates an artificial intelligence to combining the advantages of both formal and natural languages. The long-term goal is a system which could take as input an English definition of a module, and generate an equivalent formal specification. In addition, the system should generate an English paraphrase of its understanding of the input, so that the user may easily check the system's understanding. The remainder of the paper describes the design decisions made in implementing a prototype to understand English texts defining data structures. Section 2 enumerates some of the reasons we feel are most important for using natural language. Section 3 defines the target specification language and the motivation in selecting it. Section 4 relates our experience in using a parser for texts defining data structures. Section 5 deals with semantic issues such as interpreting spatial metaphors and selecting precise translations of vague English terms. Related work and our conclusions are presented in sections 6 and 7.

DESCRIPTORS: \*Computer programs, \*Natural language, \*Specifications, \*Information processing, Language translation, Motivation, Text processing, Word organized storage, Words(Language).

IDENTIFIERS: Horn clauses, Semantics, Syntax Semantic analysis, Syntactical analysis, PEG1102F, WUAFOSR2304A2

AD-A131 479

UNCLASSIFIED

PAGE

16

AD-A131 478

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 478 12/1 20/9

CORNELL UNIV ITHACA NY

Unified Theory of Plasma Correlations.

DESCRIPTIVE NOTE: Interim rept..

JUN 83 35P Guillen, Michael A. ;Liboff,

Richard L. ;

REPT. NO. TR-R-4-83

CONTRACT: AFOSR-78-3574

PROJ: 2301

TASK: A3

MONITOR: AFOSR TR-83-0664

## UNCLASSIFIED REPORT

ABSTRACT: A unified approach to the theory of correlations in a plasma is presented, based on the BBKGY hierarchy. The theory is applied to a one-component plasma with the Coulomb interaction modified to include effects of the background. Closed integro-differential equations in space and time are obtained for the two-particle correlation function in both the strong and weak coupling limits. In the weak-coupling domain,  $\gamma \ll 1$ , the time-independent analysis returns the well-known linearized Debye-Huckel result, where  $\gamma$  is the plasma parameter. In the strong-coupling domain  $\gamma > 1$ , the resulting two-particle total correlation function exhibits decaying oscillatory behavior for particle separation of the order of the effective interparticle range. (Author)

DESCRIPTORS: \*Correlation techniques, \*Plasmas(Physics), \*Coupling(Interaction), Parameters, Integral equations, Differential equations, Perturbations, Particles, Oscillation

IDENTIFIERS: PEG1102F, WUAFOSR2301A3

AD-A131 479

UNCLASSIFIED

PAGE

16

AD-A131 478

UNCLASSIFIED

EVN35A



UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 448 20/14 8/14

EMMANUEL COLL BOSTON MA

Geomagnetic Pulsations-Production/  
Interpretation.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Sep 78-30  
Sep 81.

SEP 82 59P Maple, Elwood ;

CONTRACT: AFOSR-77-3467

PROJ: 3211

TASK: A1

MONITOR: AFOSR TR-83-0632

UNCLASSIF REPORT

**ABSTRACT:** Work has been devoted to experimental studies of middle-latitude geomagnetic pulsations in the period range 0.2 to 50 minutes. The principal effort has been on the resonant periods of the pulsations which arise from hydromagnetic resonances in the magnetosphere. The resonant periods appear as peaks in the period distributions and frequency spectra of the pulsations. The present work utilizes polarization traces which provide continuous displays of the polarization of the pulsations in selected period bands. This analysis technique was conceived some time ago. The early studies established that hydromagnetic (HM) waves were frequently observed throughout the 0.2 to 50 minute period range and that waves of several different periods were often observed simultaneously during both magnetically quiet and disturbed intervals. That effort was terminated before the potentialities of the technique had been exploited, and the early results were not widely disseminated. Some of the original data have been resurected for the initial work under this grant, and the analysis technique has been extended.

DESCRIPTORS: \*Geomagnetism, \*Pulses, (U)

\*Magnetohydrodynamics, Magnetosphere, Magnetic resonance, Standing waves, Polarization, Bandpass filters, Waveforms, Harmonics, Magnetometers.

IDENTIFIERS: \*Geomagnetic pulsations, (U)  
PE61102F (U)

AD-A131 448

UNCLASSIFIED

PAGE

17

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 403 9/2 6/5 6/14

OHIO STATE UNIV COLUMBUS DEPT OF COMPUTER AND INFORMATION  
SCIENCECSRL (Conceptual Structures Representation  
Language): A Language for Expert Systems  
Diagnoses.

(U)

DESCRIPTIVE NOTE: Technical rept.,

83 6P Bylander, Tom ; Mittal, Sanjay

; Chandrasekaran, B. ;

CONTRACT: AFOSR-82-0255

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0659

UNCLASSIFIED REPORT

**ABSTRACT:** We present CSRL (Conceptual Structures Representation Language) as a language to facilitate the development of expert diagnosis systems based on a paradigm of cooperating diagnostic specialists. MDX, the medical diagnosis system that has been developed in our laboratory over the past few years is based on this paradigm. In our approach, diagnostic reasoning is one of several generic tasks, each of which calls for a particular organizational and problem solving structure. A diagnostic structure is composed of a collection of specialists, each of which corresponds to a node or concept in a diagnostic hierarchy, e.g., a classification of diseases. A top-down strategy called establish-refine is used in which either a specialist establishes and then refines itself, or the specialist reflects itself, pruning the hierarchy that it heads. CSRL is a language for representing the concepts of a diagnostic hierarchy and for implementing the establish-refine process. The body of a concept specifies how it will respond to different messages from its super concept. The knowledge to establish or reject a concept is factored into knowledge groups, which corresponds to specific decisions in the diagnosis. (Author)

(U)

DESCRIPTORS: \*Artificial intelligence, \*Medical computer applications, \*Diagnosis (Medicine), \*Programming languages, Structural analysis, Systems engineering, Reasoning, Hierarchies, Computer logic, High level languages, Problem solving

(U)

(U)

IDENTIFIERS: \*CSRL (Conceptual Structures

AD-A131 403

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 396 20/4 14/2

PRINCETON UNIV NJ DEPT OF MECHANICAL AND AEROSPACE  
ENGINEERING

Wind Tunnel Wall Interference.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Apr 77-31 Mar 82,

APR 83 20P Bliss, D. B. ;

CONTRACT: AFOSR-77-3337

PROJ: 2307

TASK: A1

MONITOR: AFOSR TR-83-0655

UNCLASSIFIED REPORT

ABSTRACT: The aerodynamic behavior of an isolated finite length slender slot in a wind tunnel wall was analyzed. Numerical and analytical solutions were obtained relating the pressure differential to the average flow rate through the slot as a function of slot geometry for subsonic and supersonic flow.

These solutions apply to the cases of linear and quadratic behavior corresponding to small and large slot flow rates. The analysis was extended to include the effect of an imposed pressure gradient along the slot. The results obtained are applicable to low aspect ratio holes as well as slots, and thus provide insight into the behavior of both slotted and perforated walls. The pressure gradient effect on holes was found to introduce a pressure tunnel walls. The effect of aerodynamic interference between holes in a perforated wall was studied for two- and three-dimensional configuration using a wavy wall model problem. It was found that the interference effect between wall elements is relatively local over a wide range of parameters, thereby allowing it to be represented by an additional term in the average wall boundary condition. The interference effect takes the form of a streamline curvature term. The concept of a compliant wall wind tunnel was explored by analysis of a model problem to demonstrate a particular flexible wall concept. In the area of adaptive wall winds tunnels, a method was developed which shows how control adjustments should be made to converge very rapidly to interference-free conditions.

(U)

DESCRIPTORS: \*Wind tunnels, \*Subsonic flow,

\*Supersonic flow, \*Walls, Interference, Slots.

AD-A131 396

UNCLASSIFIED

PAGE

18

AD-A131 390

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 390 7/3 7/4

DELAWARE UNIV NEWARK DEPT OF PHYSICS

Heat Capacity and Magnetic Studies of  
Graphite Intercalated with FeCl<sub>3</sub> and  
NiCl<sub>2</sub>(+2),

(U)

MAR 82 4P Onn, David G. ; Alexander, M.

Grayson ; Ritsko, J. J. ; Flandrois, S. ;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0641

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Applied Physics,  
v53 n3 p2751-2753 Mar 82.

Reprint: Heat Capacity and Magnetic Studies of  
Graphite Intercalated with FeCl<sub>3</sub> and NiCl<sub>2</sub>(2).

DESCRIPTORS: \*Graphite, \*Physical properties,

\*Carbon compounds, Iron organic compounds, \*Nickel  
compounds, Chlorine compounds, Magnetic properties,  
Thermal properties, Specific heat, Glassy carbon,  
Reprints

(U)

IDENTIFIERS: \*Graphite intercalation compounds,

(U)

WUAFOSR2306C3, PE61102F

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 385

9/2

OHIO STATE UNIV COLUMBUS DEPT OF COMPUTER AND INFORMATION SCIENCE

Expert Systems: Matching Techniques to tasks.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAY 83 20P Chandrasekaran, B. ;

CONTRACT: AFOSR-82-0255

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0660

UNCLASSIFIED REPORT

ABSTRACT: The major line of argument that we will pursue in this paper can be outlined as follows. In Sec. II, we briefly trace the development of the idea of knowledge-based systems in AI. Sec. III is devoted to discussing the increasing need for symbolic content to expert reasoning as the size and demands of the task domain increase; i.e., we will analyze why a complete mathematical model of the situation, even if available, will not meet many of the demands placed on expert reasoning. In Sec. IV, we discuss the several distinct senses and roles that the notion of rules can play and have played in expert systems, and how a failure to keep these separate can cause a great deal of confusion in Sec. V, we will argue that further

organizational constructs, such as concepts and types of problem solving, are needed both to construct more powerful expert systems, and to characterize their capabilities. We will also provide two examples of generic problem-solving types, and show how each type of problem-solving induces an organization of knowledge in the form of a cooperating community of specialists engaged in that problem solving type. The overall flow of the discussion is in the direction of the evolution of expert systems from numerical programs to highly organized symbolic structures engaged in distinct types of problem-solving and communicating with one another.

(U)

DESCRIPTORS: \*Artificial intelligence, \*Computer applications, Computers, Methodology, Utilization, Man computer interface, Problem solving, Data processing, User needs, Commercial equipment, Computer programs, Computer logic, Reasoning, IDENTIFIERS: Expert systems, PE61102F,

AD-A131 385

UNCLASSIFIED

PAGE

19

AD-A131 382

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 382

5/4

5/2

ILLINOIS UNIV AT URBANA COORDINATED SCIENCE LAB

Artificial Intelligence Implications for Information Retrieval.

(U)

DESCRIPTIVE NOTE: Technical rept.,

APR 83 17P DeJong, Gerald ;

CONTRACT: F49620-82-K-0009

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0658

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual International ACM SIGIR Conference (6th), 6-8 Jun 83, Washington, DC.

ABSTRACT: The field of information retrieval is already more aware than many other fields of the relevance of artificial intelligence. Nonetheless there remain exciting applications of artificial intelligence that have been so far overlooked. In this paper we will point out some of the ways artificial intelligence might influence the field of information retrieval. We will then examine one application in more detail to discover the kind of technical problems involved in its fruitful exploitation.

(U)

DESCRIPTORS: \*Artificial intelligence, \*Information retrieval, \*Technology forecasting, Computer applications, Memory devices, Man computer interface, Machine aided indexing, Data processing, Data management, Data bases, User needs, Input output processing, Management information systems, Research management

(U)

(U)

IDENTIFIERS: WUAFOSR2304A2, PE61102F

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN35A

AD-A131 376 8/13 14/2

CALIFORNIA UNIV DAVIS DEPT OF CIVIL ENGINEERING

In Situ Characterization of Saturated Sands;  
and Silts for the Prediction of Dynamic Shear  
Modulus and Shear Wave Velocity.

(U)

DESCRIPTIVE NOTE: Annual rept. Aug 81-Aug 82,  
NOV 82 28P Arulanandan, K.; Arulmoli, K.  
; Dafalias, Y. F.; Heriman, L. R. ;  
CONTRACT: AFOSR-81-0216  
PROJ: 2307  
TASK: C1  
MONITOR: AFOSR TR-83-0652

UNCLASSIFIED REPORT

ABSTRACT: An electrical method of characterizing coarse-grained soils is described. A nondestructive method of determining dynamic properties of coarse-grained soils is developed based on this fundamental characterization of soils. Correlations are established relating  $k$  sub 2 max, coefficient required to obtain dynamic shear modulus to the appropriate electrical parameters. This laboratory correlation was verified by field measurements. A comparison is made between predicted and measured shear wave velocities. (Author)

(U)

DESCRIPTORS: \*Soil mechanics, \*Nondestructive testing, Sand, Silt, Shear properties, Dynamics, Velocity, Electrical properties, Coefficients, Comparison, Measurement, Mathematical prediction  
IDENTIFIERS: WUAFOSR2307C1, PEG1102F

(U)  
(U)

AD-A131 376

UNCLASSIFIED

PAGE

20

AD-A131 366

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 366 8/13 20/14 12/1 20/11

TEXAS UNIV AT AUSTIN GEOTECHNICAL ENGINEERING CENTER

Effects of Rigid Inclusions on Wave  
Propagation.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
MAR 83 111P Suddhiprakarn, Chairat ;  
Rosset, Jose M. ; Stokoe, Kenneth H. , II ;  
REPT. NO. GR83-3  
CONTRACT: AFOSR-80-0031  
PROJ: 2307  
TASK: C1  
MONITOR: AFOSR TR-83-0656

UNCLASSIFIED REPORT

ABSTRACT: The effect of rigid inclusions on the characteristics (amplitude and time of arrival) of shear and P-waves is investigated using a finite element model to discretize the region of interest and an explicit integration scheme. The effect of boundary conditions, type of excitation (point load versus distributed load) and wave length (or frequency of the excitation) are investigated and discussed. (Author)

(U)

DESCRIPTORS: \*Soil mechanics, \*Wave propagation, \*Stress waves, \*Finite element analysis, Soil classification, Mechanical properties, Dynamics, Homogeneity, Accelerometers, Stiffness, Measurement, Excitation, Velocity, Boundaries, Loads (Forces), Distribution, Geophysics, Engineering geology, Mathematical models  
IDENTIFIERS: S-waves, P-waves, Shear waves, WUAFOSR2307C1, PEG1102F

(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 362 20/13 7/2

DELAWARE UNIV NEWARK DEPT OF PHYSICS

Low-Temperature Specific Heat of the Graphite Intercalation Compounds KC8, CsC8, RbC8, and Their Parent Highly Oriented Pyrolytic Graphite.

(U)

NOV 80 9P Alexander, M. Grayson ;  
Goshorn, David P. ; Onn, D. G. ;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0639

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review B, v22

n10 p4535-4542, 15 Nov 80.

Reprint: Low-Temperature Specific Heat of the Graphite Intercalation Compounds KC8, CsC8, RbC8, and Their Parent Highly Oriented Pyrolytic Graphite.

DESCRIPTORS: \*Specific heat, \*Low temperature, \*Pyrolytic graphite, Carbides, Electronic states, Electrons, Phonons, Crystal lattices, Pyrolysis, physical properties, Theory, Experimental data, Reprints

(U)

IDENTIFIERS: Intercalation, Metallic intercalated graphite, Cesium carbides, Potassium carbides, Rubidium carbides, PE61102F, WUAFOSR2306C3

(U)

AD-A131 362

UNCLASSIFIED

PAGE

21

AD-A131 361

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 361 20/13 7/2

DELAWARE UNIV NEWARK DEPT OF PHYSICS

The Specific Heat, 0.4K to 90K, of C8Cs, C8Rb and Their Parent HOPG (Highly Oriented Pyrolytic Graphite).

(U)

79 3P Alexander, M. Grayson ;  
Goshorn, David P. ; Onn, David G. ;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0640

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Biennial Conference on Carbon (14th) p274-275 1979.

The Specific Heat, 0.4K to 90K, of C8K,

C8Cs, C8Rb and Their Parent HOPG (Highly Oriented Pyrolytic Graphite).

(U)

DESCRIPTORS: \*Specific heat, \*Low temperature, \*Carbides, \*Pyrolytic graphite, Electronic states, Electrons, Phonons, Crystal lattices, Pyrolysis, Thermal expansion, Relaxation, Physical properties, Theory, Experimental data, Reprints

(U)

IDENTIFIERS: Intercalation, Metal graphite intercalation, HOPG(Highly Oriented Pyrolytic Graphite), Cesium carbides, Potassium carbides, Rubidium carbides, PE61102F, WUAFOSR2306C3

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 360 21/5 20/4

IOWA STATE UNIV AMES ENGINEERING RESEARCH INST

Aerodynamics of Advanced Axial-Flow Turbomachinery.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 80-30 Nov 82.  
 FEB 83 73P Schovy, George K.; Kavanagh, Patrick; Kikuchi, Theodore H.;  
 REPT. NO. ISU-ERI-AMES-83234, ICRL-23  
 CONTRACT: AFOSR-81-0004  
 PROJ: 2307  
 TASK: A4  
 MONITOR: AFOSR TR-83-0651

## UNCLASSIFIED REPORT

ABSTRACT: A multi task research program on the aerodynamics of advanced axial-flow turbomachinery was completed at Iowa State University. Program components were intended to result in direct contributions to the improvement of axial-flow fan, compressor, and turbine design procedures. A detailed experimental investigation of intrapassage flow in a large-scale, curved, rectangular cross-section channel representative of turbomachinery passages was carried out. The use of stator geometry modification to improve stage performance through better secondary flow control was investigated via laboratory tests of baseline and modified version of a two-stage compressor. Aerodynamic variables which influence surface boundary layer development in compressor and turbine airfoil cascades were restudied in order to determine sources of differences between linear cascade performance and performance of equivalent cascade geometries in multistage turbomachine blade rows.

DESCRIPTORS: \*Axial flow turbines, \*Axial flow compressors, \*Aerodynamics, Axial flow compressor blades, Axial flow fans, Aerodynamic characteristics, Cascades (Fluid dynamics), Boundary layer flow, Geometry, Computations  
 IDENTIFIERS: PE61102F, WUAFOSR2307A4

(U)

(U)

(U)

AD-A131 360

UNCLASSIFIED

PAGE

22

AD-A131 351

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 351 12/1 9/2

ARIZONA STATE UNIV TEMPE DEPT OF COMPUTER SCIENCE

On a Computer-Based Theory of Strategies.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 83 11P Findler, Nicholas V.;  
 CONTRACT: AFOSR-82-0340  
 PROJ: 2304  
 TASK: A2  
 MONITOR: AFOSR TR-83-0662

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Kybernetes, v12 p89-97 1983.

Reprint: On a Computer-Based Theory of Strategies.

DESCRIPTORS: \*Strategy, \*Theory, \*Computer applications, Game theory, Artificial intelligence, Decision theory, Operations research, Reprints (U)

NO 1214 912

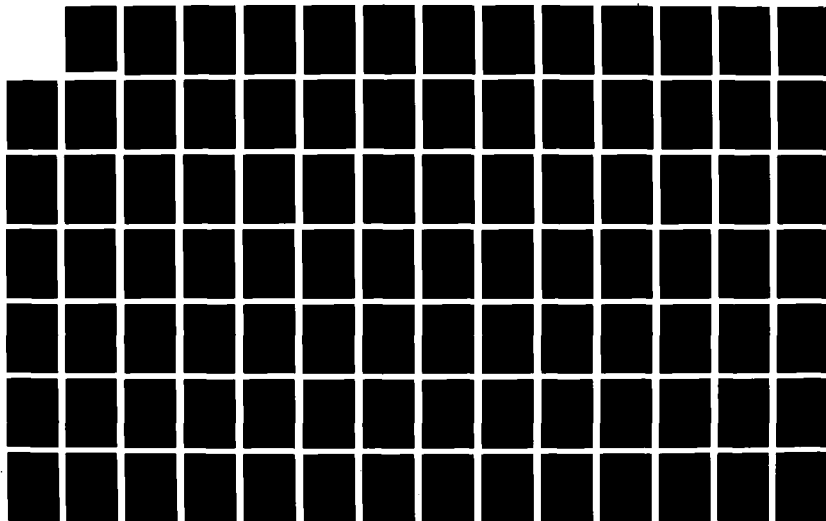
AFOSR (AIR FORCE OFFICE OF SCIENTIFIC RESEARCH)  
 TECHNICAL REPORT SUMMARIE.. (U) AIR FORCE OFFICE OF  
 SCIENTIFIC RESEARCH DOLLING AFB DC 8 MERT SEP 83  
 AFOSR-TR-89-1514

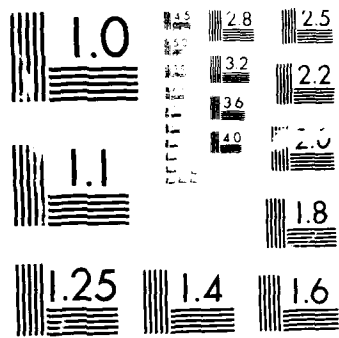
2/3

UNCLASSIFIED

F/O 5/2

ML







## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 347 20/12 7/4 9/5

RENSELAEER POLYTECHNIC INST TROY NY DEPT OF ELECTRICAL  
COMPUTER AND SYSTEMS ENGINEERINGSemiconductor Surface Characterization Using  
Transverse Acoustoelectric Voltage versus  
Voltage Measurements. (U)

DESCRIPTIVE NOTE: Annual rept. 1 Aug 81-31 Oct 83,  
OCT 82 9p Davari, B. ; Das, Pankaj K. ;  
CONTRACT: AFOSR-77-3426  
PROJ: 2306  
TASK: B2  
MONITOR: AFOSR TR-83-0646

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Continuation of Grant AFOSR-82-0281.

ABSTRACT: An alternative to Capacitance-Voltage (C-V) measurement is experimentally demonstrated. This technique measures the Transverse Acoustoelectric Voltage (TAV) as a function of applied D.C. voltage across the semiconductor. The technique is nondestructive and is applied to uniformly doped Si samples. Surface properties such as the flat band voltage, oxide charge and the zero bias surface condition are determined. P.S. An annual interim report is being accepted as the Final report for AFOSR-77-3426. The technical effort is being continued for one year under AFOSR-82-0281. The final report for this continuation will contain more overall detail and should be considered as the final report for the entire technical effort. (Author)

DESCRIPTORS: \*Semiconductors, \*Surface properties, \*Surface acoustic wave devices, Surfaces.

Measurement, Voltage, Capacitance, Silicon, Oxides, Bias, Direct current, Doping

IDENTIFIERS: Acoustoelectric voltage, Surface states, Transverse voltage, Interface states, TAV(Transverse Acoustoelectric Voltage), Bulk properties, Surface conductivity, PE61102F, WUAFOSR230682

AD-A131 347

UNCLASSIFIED

PAGE

23

AD-A131 340

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 340 9/2

OHIO STATE UNIV COLUMBUS DEPT OF COMPUTER AND INFORMATION  
SCIENCEAn Approach to Expert Systems for  
Mechanical Design. (U)

DESCRIPTIVE NOTE: Technical rept...  
MAY 83 21p Brown, David C. ;  
Chandrasekaran, B. ;  
CONTRACT: AFOSR-82-0255  
PROJ: 2304  
TASK: A2  
MONITOR: AFOSR TR-83-0657

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the IEEE Computer Society, Trends &amp; Applications Conference, May 83, Gaithersburg, MD.

ABSTRACT: We present an approach to expert systems for mechanical design called Design Refinement, which addresses a subset of design activity by using a hierarchy of conceptual specialists that solve the design problem in a disturbed manner, top-down, choosing from sets of design plans and refining the design at each level of the hierarchy. (U)

DESCRIPTORS: \*Distributed data processing, \*Computer programs, \*Computer architecture, \*Experimental design, \*Economic analysis, Systems engineering, Problem solving, Management planning and control, Specifications, Computer graphics, Data bases, Room temperature, Human factors engineering, Computer aided design, Management information systems

IDENTIFIERS: Mechanical design, Expert systems, Design refinement, Top down approach, Design goals, Computer substructure, WUAFOSR2304A2, PE61102F

AD-A131 347

UNCLASSIFIED

PAGE

23

AD-A131 340

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 333 20/6

ADVANCED INFORMATION AND DECISION SYSTEMS MOUNTAIN VIEW  
CA

Three-Dimensional Feature Extraction. (U)

DESCRIPTIVE NOTE: Technical rept.,

JUN 83 5P Kuan, Darwin ;

CONTRACT: F49620-82-C-0071

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0663

UNCLASSIFIED REPORT

**ABSTRACT:** Range images offer a significant advantages over passive reflectance images because they preserve the 3-D information of the scene viewed from the sensor. Therefore, range data is becoming an increasingly important source of information for a variety of applications including 3-D target classification, autonomous vehicles, and robot vision. This research is part of an effort to develop a 3-d object recognition system for vehicle objects in air-to-ground laser range imagery. The full system includes image feature extraction, object modeling, model-driven prediction, and feature to model matching. This paper presents several three-dimensional feature extraction techniques for use on laser range imagery. These include object-ground segmentation, projection image generation from range data, and 3-D physical edge detection. We emphasize extracting 3-D physical features of the object from 3-D range data without restricting ourselves in a sensor-centered range image format. The object-ground segmentation and projection image generation techniques extract global object features from range data, and are useful for object orientation estimation and major structures identification. The 3-d physical edge detector directly calculates the physical angle of the object surface. It is not only useful for physical edge (convex, concave, occluding) detection, but also provides useful information for extracting planar and curved surfaces.

**DESCRIPTORS:** \*Algorithms, \*Image processing, \*Extraction, Methodology, Lasers, Images, Three dimensional, Edges, Detection, Computations, Surfaces

**IDENTIFIERS:** \*Feature extraction, Laser range

AD-A131 333

UNCLASSIFIED

PAGE

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 324 11/6 20/11 12/1

CALIFORNIA UNIV BERKELEY DEPT OF MATERIALS SCIENCE AND  
MINERAL ENGINEERINGFatigue Behavior of Long and Short Cracks  
in Wrought and Powder Aluminum Alloys. (U)DESCRIPTIVE NOTE: Annual rept. no. 1, 15 Apr 82-14 Apr  
83,

MAY 83 97P Ritchie, Robert O. ;

REPT. NO. UCB/RP/1E/A1013

CONTRACT: AFOSR-82-0181

PROJ: 2306

TASK: A1

MONITOR: AFOSR TR-83-0616

UNCLASSIFIED REPORT

**ABSTRACT:** The fatigue behavior of short cracks, which are small compared to the scale of the microstructure, small compared to the scale of local plasticity or simply physically small (i.e., approximately  $< 1$  mm), must be considered as one of the major factors limiting the application of defect-tolerant fatigue design for airframe and engine components. Accordingly, this program is aimed at identifying factors which govern the growth of such short cracks in a series of commercial aluminum alloys, with specific reference to behavior at near-threshold levels. In this report, the fundamental basis for the study is described in terms of i) a detailed review of the factors which lead to differences in long and short crack behavior, and ii) a theoretical analysis of the influence of crack deflection and closure mechanisms on long and short crack behavior. It is concluded that many anomalies in the behavior of short fatigue cracks can be traced primarily to closure and deflection mechanisms, and accordingly an experimental program is prepresented with the objective of isolating these effects.

(Author)

**DESCRIPTORS:** \*Aluminum alloys,

\*Fatigue(Mechanics), \*Cracks, \*Crack propagation, Factor analysis, Defects(Materials), Failure(Mechanics), Mechanical properties, Tolerances(Mechanics), Morphology, Aging(Materials), Microstructure, Plastic properties, Stresses, Airframes, Aircraft engines, Experimental data

**IDENTIFIERS:** PE61102F, WUAFOSR2306A1

AD-A131 324

UNCLASSIFIED

24

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A131 316

12/1

PITTSBURGH UNIV PA DEPT OF ELECTRICAL ENGINEERING

Approximation Methods in Multidimensional  
Filter Design and Related Problems  
Encountered in Multidimensional System  
Design.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 78-31 Jan 83,  
MAR 83 34P Bose, N. K. ;  
CONTRACT: AFOSR-78-3542  
PROJ: 2304  
TASK: A6  
MONITOR: AFOSR TR-83-0661

## UNCLASSIFIED REPORT

ABSTRACT: The research conducted contributes towards the development of a theory to analyze and design linear shift-invariant multivariable multidimensional discrete and continuous systems. Recursive schemes to compute rational approximations to a power series in two variables having constant matrices for coefficients are developed. Approximations to special matrix power series are investigated and the properties of these approximations are delineated in a strictly mathematical setting and their implications are interpreted via physical reasonings. Algebraic procedures to test these approximations for stability are provided, and criteria for guaranteeing the invariance of properties like positivity and stability under parameter changes or perturbation are advanced. Attention is directed throughout towards the reduction of algebraic computational complexity. In the important problem of filter stabilization without appreciable change in the magnitude of the frequency response, recent results on multiplicative computational complexity of theory is exploited to demonstrate the feasibility of implementing efficiently a 2-D discrete Hilbert transform. Criteria for 2-D rational approximations to be maximally flat are obtained.

(U)

DESCRIPTORS: \*Mathematical filters,  
\*Approximations(Mathematics), Algebra,  
Computations, Bibliographies,  
Matrices(Mathematics), Digital filters, Two  
dimensional, Stability, Stabilization,  
Polynomials  
IDENTIFIERS: Robust procedures, PE61102F,  
WUAFOSR2304A6

(U)

AD-A131 316

## UNCLASSIFIED

PAGE

25

AD-A131 311

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 311

20/6

20/5

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

Large-Signal Results for Degenerate Four-  
Wave Mixing and Phase Conjugate Resonators,

(U)

83 - 10P Jian-quan, Yao ; Guosheng, Zhou  
; Slegman, A. E. ;  
REPT. NO. GL-3440  
CONTRACT: F49620-82-K-0015  
PROJ: 2301  
TASK: A1  
MONITOR: AFOSR TR-83-0634

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Physics B, v30  
p11-18, 1983.  
Reprint: Large-Signal Results for Degenerate  
Four-Wave Mixing and Phase Conjugate  
Resonators.

DESCRIPTORS: \*Resonators, \*Mirrors, \*Compensators,  
\*Lasers, Refractive index, Nonlinear systems,  
Kerr magnetooptical effect, Laser pumping, Gain,  
Losses, Distortion, Reprints  
IDENTIFIERS: Four wave mixing, DFWM(Degenerate  
Four Wave Mixing), Degenerate mixing, Chase  
conjugate resonators, Distributed losses, Large  
signals, Phase distortion, Nonlinear optics,  
PE61102F, WUAFOSR2301A1

(U)

(U)

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 297 20/6

ROCHESTER UNIV NY INST OF OPTICS

Optical Systems and Statistical Optics. (U)

DESCRIPTIVE NOTE: Annual rept. 1 Oct 81-1 Mar 83,

MAY 83 52P George, Nicholas ;

CONTRACT: AFOSR-77-3434

PROJ: 2305

TASK: B1

MONITOR: AFOSR 1R-83-0644

## UNCLASSIFIED REPORT

ABSTRACT: Theoretical and experimental research is being conducted in the field of opto-electronic systems. The goal is to contribute solutions to problems of basic research importance which also have an underlying significance in practical applications that involve automatic pattern recognition and remote sensing. White light processing systems are described both for matched filtering and for diffraction pattern sampling. Also excellent progress is reported on our related studies of broadband holographic optical elements and an off-axis Fourier transform achromat. With coherent illumination we report a means for automatic image quality evaluation. The scattering of light by dielectric and conducting cylinders has been studied theoretically and experimentally with an emphasis on remote optical metrology. (Author)

DESCRIPTORS: \*Optical processing, \*Holography, Illumination, Electrooptics, Metrology, Light scattering, Pattern recognition, Remote detectors, White light, Matched filters, Diffraction analysis, Broadband, Fourier transformation  
IDENTIFIERS: Statistical optics, PE61102F, WUAFOSR2305B1 (U)

AD-A131 297

UNCLASSIFIED

PAGE

26

AD-A131 284

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 284 8/13

APPLIED RESEARCH ASSOCIATES INC ALBUQUERQUE NM

Fundamental Properties of Soils for Complex Dynamic Loadings: Dynamic Constitutive Modeling of Sandy Soil. (U)

DESCRIPTIVE NOTE: Annual, Technical rept. no. 2, 1 Aug 81-31 Jul 82,

APR 83 118P

Douglas H.; Bratton, Jirmie L.; ;

CONTRACT: F49620-80-C-0088

PROJ: 2307

TASK: C1

MONITOR: AFOSR TR-83-0053

## UNCLASSIFIED REPORT

ABSTRACT: Constitutive modeling of cohesionless soil for both standard static test conditions and insitu impulsive dynamic load conditions is discussed in this annual report. Predicted laboratory response for several different types of models is evaluated using data from a coordinated testing program. The modeling of insitu soil response to explosive events (CIST and DISC Test) is considered, and the laboratory-derived models are tested for their convenience and accuracy in predicting ground motions. Several important laboratory and insitu phenomena which were not reflected by the model exercises are discussed. Based on the conclusions from this study, testing and modeling requirements for dynamic loading situations are proposed

DESCRIPTORS: \*Soil mechanics, \*Sand, Dynamic loads, Soil models, Computer programs, Computerized simulation, Loads(Forces), Interactions, Stresses, Models  
IDENTIFIERS: PE61102F, WUAFOSR2307C1 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 283 7/4 20/7 20/8

PENNSYLVANIA UNIV PHILADELPHIA DEPT OF CHEMISTRY

Theoretical Aspects of Cluster Formation by  
keV Bombardment of Rare-Gas Solids.

DESCRIPTIVE NOTE: Technical rept.,

MAY 83 9P Garrison, B. J. ; Winograd,

N. ;

REPT. NO. TR-13

CONTRACT: N00014-80-C-0491, AFOSR-82-0057

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0709

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Chemical Physics

Letters, v97 n4, 5 p381-386, 27 May 83.

Reprint: Theoretical Aspects of Cluster Formation  
by keV Bombardment of Rare-Gas Solids.

DESCRIPTORS: \*Mass spectroscopy, \*Ion beams,  
\*Molecular properties, \*Clustering, Rare gases,  
Solids, Ion bombardment, Reprints  
IDENTIFIERS: SIMS(Secondary Ion Mass Spectra),  
SIMS(Secondary Ion Mass Spectroscopy),  
WUNR051744, PE61102F, WUAFO5R2303SA1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 279 12/1

SCIENCE APPLICATIONS INC PLEASANTON CALIF

Moving Finite Elements in 2-D.

DESCRIPTIVE NOTE: Annual rept. no. 2, 8 Jun 82-7 Jun  
83.

MAY 83 28P Gelinas, Robert J. ;

REPT. NO. SAI-PL/MFE-2D-2-83

CONTRACT: F49620-81-C-0073

PROJ: 2304

TASK: A3

MONITOR: AFOSR TR-83-0623

UNCLASSIFIED REPORT

ABSTRACT: In this second year of effort, truly large-scale computing aspects of PDE's (partial differential equations) have been addressed. MFE (moving finite element) node movement properties of highly sheared fluid flows and shocks were studied. The following results were obtained: (1) extremely large nodal savings were obtained by the MFE method in highly sheared shock examples; (2) such ODE solvers as the Gear method require significant restructuring of their internal code logic in order to achieve improved time step and error-controlling policies in PDE applications; (3) iterative linear solvers are required in order to accommodate large MFE grid meshes; (4) a new iterative solver of linear systems was developed in order to attain large convergence rates in advection-diffusion equations with highly inhomogeneous mesh spacings, which cannot be solved satisfactorily with other existing linear solvers; (5) first-generation regularization schemes resolved highly sheared flows; and, although large grid aspect ratios were resolved successfully, new regularization functions which homogenize MFE grid cells should be developed in future work; and (6) singularities which are frequently troublesome in cylindrical and spherical co-ordinates are eliminated naturally in MFE inner product formulations.

(Author)

(U)

DESCRIPTORS: \*Finite element analysis, \*Two dimensional, Computations, Partial differential equations, Problem solving, Fluid flow, Gradients, Iterations, Moving targets, Linear systems, Grids, Mesh

(U)

(U)

IDENTIFIERS: PE61102F, WUAFO5R2304A3

AD-A131 283

UNCLASSIFIED

PAGE

27

AD-A131 279

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 264 7/4 20/12 20/2

VARIAN ASSOCIATES INC PALO ALTO CA SOLID STATE LAB  
Electrical and Optical Properties of InP  
Grown by Molecular Beam Epitaxy Using  
Cracked Phosphine.

(U)

FEB 83 4P Chow, Robert ;Chai, Young G.

CONTRACT: F49620-81-C-0058

PROJ: 2305

TASK: CL

MONITOR: AFOSR TR-83-0645

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Physics Letters,  
v42 n4 p383-385, 15 Feb 83.  
Reprint: Electrical and Optical Properties of InP  
Grown by Molecular Beam Epitaxy Using Cracked  
Phosphine.

DESCRIPTORS: \*Indium phosphides; \*Crystal growth,  
\*Electrical properties, \*Optical properties,  
Molecular beams, Epitaxial growth, Phosphine,  
Catalytic cracking, Doping, Photoluminescence,  
Reprints

IDENTIFIERS: PEG1102F, WIAFOSR2305CL

(U)

(U)

AD-A131 264

UNCLASSIFIED

PAGE

28

AD-A131 238

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 238 12/1 20/8

MARYLAND UNIV COLLEGE PARK DEPT OF PHYSICS AND  
ASTRONOMY

New Method in Elementary Particle  
Detection.

(U)

DESCRIPTIVE NOTE: Final rept., 1 Jan 81-31 Dec 82,  
FFR 83 41P Weber, J. ;

CONTRACT: F49620-81-C-0024, ARPA Order-4099

MONITOR: AFOSR TR-83-0681

## UNCLASSIFIED REPORT

ABSTRACT: A general theory of coherent scattering  
is presented. Applications for very low energy  
involving the neutral current interactions are  
considered in detail, together with results of  
experimental checks. (Author)

(U)

DESCRIPTORS: \*Numerical methods and procedures,  
\*Coherent scattering, \*Theory, \*Elementary  
particles, \*Detection, Low energy, Scattering  
cross sections, Neutrinos, Currents, Interactions,  
Current density, Charts

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 223 11/6 6/13

NATIONAL BUREAU OF STANDARDS WASHINGTON DC NATIONAL MEASUREMENT LAB

The Mechanism of Anaerobic (Microbial) Corrosion. (U)

DESCRIPTIVE NOTE: Technical summary rept. no. 1, 1 Jun-31 Dec 82. (U)

DEC 82 40P Iverson, Warren P. ;Olson, Gregory J. ;

CONTRACT: N00014-82-F-0086, AFOSR-82-0709

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0709

## UNCLASSIFIED REPORT

ABSTRACT: This report in the form of three papers describes research into the role of bacteria in anaerobic corrosion processes. During the year we have given more evidence for a novel mechanism of anaerobic corrosion in which a volatile, highly reactive phosphorus compound is produced as a result of the activities of sulfate-reducing bacteria (Desulfovibrio desulfuricans). The corrosion product is an amorphous type of iron phosphide which can be detected by the formation of phosphine upon its acidification. Phosphine (in addition to H<sub>2</sub>S) has been detected from all the cases of suspected anaerobic corrosion (including tubercles from the inside of water pipes) examined so far. In examining the headspace over growing cultures of Desulfovibrio to detect this volatile phosphorus containing compound, using a gas chromatograph (GC) with a flame photometric detector (FPD) specific for phosphorus and sulfur, two sulfur compounds, in addition to H<sub>2</sub>S, were detected and identified. These compounds, methylmercaptan, and dimethyldisulfide, were found to be relatively non-corrosive to iron under anaerobic conditions. No volatile phosphorus compounds were detected. (U)

DESCRIPTORS: \*Corrosion, \*Anaerobic bacteria, \*Anaerobic processes, Iron compounds, Reduction(Chemistry), Hydrogen sulfide, Phosphine, Phosphorus, Metabolites, Microbiology (U)

IDENTIFIERS: Microbial corrosion, Desulfovibrio, WUNR205046, PE61102F, WUAFDSR2303A1 (U)

AD-A131 223

## UNCLASSIFIED

PAGE

29

AD-A131 221

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 221 12/1

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

Stable Equilibria in a Scalar Parabolic Equation with Variable Diffusion, (U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 29P Fusco, G. ;Hale, Jack K. ;

REPT. NO. LCDS-83-10

CONTRACT: DAAG29-79-C-0161, AFOSR-81-0198

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0673

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Grant NSF-MCS82-05355.

ABSTRACT: A scalar parabolic equation with nonconstant diffusion and nonlinear source term is considered and some aspects of the influence of changing the diffusion on existence, stability and bifurcation properties of the equilibria are discussed. (Author) (U)

DESCRIPTORS: \*Differential equations, \*Diffusion, \*Equilibrium(General), Scalar functions, Nonlinear systems, Parabolas, Stability, Bifurcation(Mathematics), Theorems IDENTIFIERS: Parabolic equations, PE61102F, WUAFDSR2304A4 (U) (U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 209 12/1 9/4

CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING AND  
COMPUTER SCIENCERobust Linear Filtering for Multivariable  
Stationary Time Series.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
APR 83 69P Tsaknakis, Haralampos ;  
Papantoni-Kazakos, P. ;  
REPT. NO: TR-83-6  
CONTRACT: AFOSR-78-3695  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0684

UNCLASSIFIED REPORT

ABSTRACT: The problem of asymptotic, non-causal linear filtering for statistically contaminated multivariable stationary time series is considered. The spectra of both the signal and the noise components of the observation process are assumed to belong to certain convex and compact classes. The minimax criterion of optimality is adopted, and for some specific spectral classes the corresponding solutions are found. The performance of those solutions is studied, where the performance criteria used are efficiency, error variation within the classes and breakdown curves or points. Some examples are studied quantitatively. Author)

DESCRIPTORS: \*Mathematical filters, \*Time series analysis, \*Information theory, Stationary, Multivariate analysis, Eigenvectors, Optimization, Theorems, Computations, Tables(Data), Matrices(Mathematics), Asymptotic series, Contamination, Signal to noise ratio, Minimax technique

IDENTIFIERS: Robust procedures, \*Linear filters, WUAFOSR2304A5, PE81102F

(U)

(U)

(U)

AD-A131 209

UNCLASSIFIED

PAGE

30

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 208 12/1 20/14

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS  
Analysis of a Delayed Delta Modulator.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
MAY 83 49P Gerr, Neil L. ;Cambanis,  
Stamatis ;  
CONTRACT: F49620-82-C-0009  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0683

UNCLASSIFIED REPORT

ABSTRACT: Delayed Delta Modulation (DDM) uses a second feedback loop in addition to the standard DM loop. While the standard loop compares the current predictive estimate of the input to the current sample, the new loop compares it to the upcoming sample so as to detect and anticipate slope overloading. Since this future sample must be available before the present output is determined and the estimate updated, delay is introduced at the encoding. The performance of DDM with perfect integration and step-function reconstruction is analyzed for each of three inputs. In every case, the stochastic stability of the system is established. For a discrete time i.i.d input, the (limiting) joint distribution of input and output is derived, and the (asymptotic) mean square sample point error MSE(SP) is computed when the input is Gaussian. For a Wiener input, the joint distribution of the sample point and predictive errors is derived, and MSE(SP) and the time-averaged MSE (MSE(TA)) are computed. For a stationary, first-order Gauss-Markov input, the joint distribution of input and output is derived, and MSE(SP) and MSE(TA) computed. Graphs of the MSE's illustrate the improvement attainable by using DDM instead of DM. With optimal setting of parameters, MSE(SP) (MSE(TA)) is reduced about 15% (35%). (Author)

(U)

DESCRIPTORS: \*Mathematical prediction, \*Delta modulation, \*Stochastic processes, Delay, Loops, Feedback, Input, Output, Parameters, Optimization, Stability, Integration, Distribution functions, Linear systems, Stationary, Convergence, Computations, Slope, IDENTIFIERS: WUAFOSR2304A5, PE81102F

(U)

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 206 8/11

S-CUBED LA JOLLA CA

Simulation of Ground Motions from the 1971 San Fernando Earthquake and an Aftershock of the 1975 Oroville Earthquake.

DESCRIPTIVE NOTE: Technical rept...

APR 83 22P Barker, T. G. ;

REPT. NO. SSS-R-83-6079

CONTRACT: F49620-81-C-0093, ARPA Order-4332

MONITOR: AFOSR TR-83-0668

UNCLASSIFIED REPORT

ABSTRACT: In this report, we describe a model for earthquakes which can be used to calculate ground motions at the earth's surface cheaply and accurately. The method was developed to be used as input to computer programs which can predict atmospheric pressure waves due to earthquakes. The method was used in a previous report to model the 1971 San Fernando earthquake. Approximations used in that work are checked in this report using more exact methods. The model is then modified to fit observations of an aftershock of the 1975 Oroville earthquake. (Author)

DESCRIPTORS: \*Earthquakes, \*Ground motion, \*Computerized simulation, Ground shock, Approximation (Mathematics), Mathematical prediction, Seismic waves, Velocity, Atmospheric motion, Pressure, Models

IDENTIFIERS: Aftershock

AD-A131 206

UNCLASSIFIED

PAGE

31

AD-A131 081

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 081 6/19 12/1

CONCORDIA UNIV MONTREAL (QUEBEC) DEPT OF ELECTRICAL ENGINEERING

Cervical Spline Analysis for Ejection Injury Prediction.

DESCRIPTIVE NOTE: Final research rept. Oct 80-Sep 82, NOV 82 99P Gracovetsky, S. ; Farfan, H. F. ; Helleur, Christopher D. ;

CONTRACT: AFOSR-81-0012

PROJ: 2312

TASK: A2

MONITOR: AFOSR TR-83-0590

UNCLASSIFIED REPORT

ABSTRACT: We have developed a sagittal plane mathematical model for the cervical spine (including T6-T1, C7-C1 and skull). In our model the moments due to the weight of the head and neck and the effect of external forces are balanced by forces generated internally by muscle, ligament, and intervertebral joint. With this formulation, the problem is to find a method for distributing the moment between muscle and ligament. Our calculations show that the mathematical representation of physiological behavior demands that stress be minimized at the intervertebral joint. It is interesting to note that Wolff has observed that bone architecture at the microscopic level responds to stress. Our findings suggest the system as a whole is controlled by stress. This model was then subjected to simulation in order to determine the maximum acceleration that the cervical spine would take for different postures. We found that the maximum supportable acceleration (i.e. acceleration that would result in any cervical component reaching 2/3 of its limit) depends upon the neck posture and orientation vis-a-vis the acceleration vector.

DESCRIPTORS: \*Spinal column, \*Head (Anatomy), \*Neck (Anatomy), \*Ejection, \*Wounds and injuries, \*Mathematical models, Central nervous system, Muscles, Ligaments, Stress (Physiology), Acceleration tolerance, Electromyography, Anatomical models, Optimization, Joints (Anatomy), Simulation, Predictions, Biodynamics

IDENTIFIERS: WUAFOSR2312A2, PE61102F

AD-A131 206

UNCLASSIFIED

PAGE

31

AD-A131 081

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 018 11/6 13/9 20/3 20/13

RICE UNIV HOUSTON TX DEPT OF MECHANICAL ENGINEERING

Metallurgical Characterization of Niobium/Tin  
Superconducting Multifilamentary Wires.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Apr-31 Dec 82.

MAR 83 39P Roberts, John Melville ;

CONTRACT: AFOSR-82-0150

PROJ: 2306

TASK: D9

MONITOR: AFOSR TR-83-0596

## UNCLASSIFIED REPORT

**ABSTRACT:** The origin of a high incidence of discontinuous Nb filaments in Niobium/bronze multifilamentary drawn wires is discussed. It is suggested their occurrence is most likely an intrinsic part of the manufacturing process. Studies on the application of the limiting grain size concept in the bronze by the Nb filaments, suggests this effect only sets an upper bound on the attainable grain size and in reality, the actually observed grain size and sub-grain size is lower than this upper bound. This leads to extensive hardening of the bronze phase as the Nb/bronze multifilamentary wires are progressively reduced to ultra-fine dimensions. Preliminary ageing studies of a 13 wt % Sn bronze alloy, suggest the alpha bronze may exhibit some age hardening decomposition phenomena in the 300 to 400 degree C temperature range for unstrained solution heat treated and quenched material. An even stronger hardening phenomena in this temperature range occurs if the material is prestrained 65% in compression after solution heat treatment but prior to ageing. Contemplated further studies in this area are presented. (Author)

(U)

**DESCRIPTORS:** \*Metallurgy, \*Superconductors, \*Wire, \*Thermal conductivity, \*Electrical conductivity, Niobium, Tin, Bronze, Filament wound construction, Grain size, Tensile strength, Hardening, Decomposition, Heat treatment, Thermal expansion, Coefficients, Annealing, Yield strength

(U)

IDENTIFIERS: WUAFOSR2306D9, PE61102F

AD-A131 018

## UNCLASSIFIED

PAGE

32

AD-A131 016

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A131 016 12/1 9/4

ALPHATECH INC BURLINGTON MA

Distributed Detection of Signal Waveforms in  
Additive Gaussian Observation Noise.

(U)

DESCRIPTIVE NOTE: Technical paper,

83 61P Lauer, G. S. ; Sandell, N.

R. , Jr. ;

REPT. NO: TP-160

CONTRACT: F49620-81-C-0015

PROJ: 2304

TASK: A6

MONITOR: AFOSR TR-83-0588

## UNCLASSIFIED REPORT

**ABSTRACT:** This paper is concerned with the detection of signal waveforms by a distributed surveillance network comprised of: a collection of spatially separated sensors, and local signal processors collocated with the sensors. The local signal processors are assumed to implement likelihood ratio tests to detect the presence or absence of the signals. Signal detections may be used for local decisionmaking or passed upward to a fusion center for further processing. In either case, the local detection thresholds cannot be determined independently, but must be determined jointly to optimize overall surveillance system performance. Results are presented concerning the nature of this threshold computation for a number of interesting cases. (Author)

(U)

**DESCRIPTORS:** \*Numerical methods and procedures, \*Signal processing, \*Waveforms, \*Signal to noise ratio, Stochastic processes, Surveillance, Probability density functions, Decision making, Global, Gaussian noise, Threshold effects, White noise, Correlation

(U)

IDENTIFIERS: WUAFOSR2304A6, PE61102F

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 973

12/1

CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING AND  
COMPUTER SCIENCERobust Prediction and Interpolation for  
vector Stationary Processes. (U)

DESCRIPTIVE NOTE: Technical rept.

NOV 82 39P

Dimitri Papanicolaou Kazakos, P.;

REPT NO. EEC8-TR-82-7

CONTRACT: AFOSR-82-0030

PROJ. 2304

TASK: A5

MONITOR: AFOSR TR 83 0448

## UNCLASSIFIED REPORT

ABSTRACT: Asymptotic linear prediction and interpolation, for statistically contaminated vector stationary processes is considered. Both prediction and interpolation are then formalized as stochastic games with saddle point solutions. The existence of unique solutions on convex and closed classes of vector stationary processes is shown. Then, those solutions are found and analyzed, for two specific classes of vector stationary processes. (Author)

DESCRIPTORS: \*Statistical processes, \*Game theory, Mathematical prediction, Interpolation, Stochastic processes, Vector analysis, Stationary, Asymptotic normality, Contamination, Solutions(General), Linearity

IDENTIFIERS: Robust procedures, PE61102F,

WUAFOSR2304A5

AD-A130 973

UNCLASSIFIED

PAGE

33

AD-A130 949

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 949 8/13 20/11

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL  
ENGINEERINGInfluence of fabric on Liquefaction and  
Densification Potential of Cohesionless Sand. (U)

82 22P Nemat-Nasser, S.; Tobita, Y.

CONTRACT: AFOSR-80-0017

PROJ: 2307

TASK: C1

MONITOR: AFOSR TR-83-0608

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Mechanics of Materials, v1  
p43-62 1982.

Reprint: Influence of fabric on Liquefaction and  
Densification Potential of Cohesionless Sand.

DESCRIPTORS: \*Sand, \*Fabrication, \*Liquid phases,  
\*Cohesion, Granules, Density, Shear stresses,  
Soil mechanics, Reprints (U)

IDENTIFIERS: Liquefaction, WUAFOSR2307C1,  
PE61102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 882 21/2 20/4 2 /5

CALIFORNIA INST OF TECH PASADENA DEPT OF ENGINEERING AND APPLIED SCIENCE

Linear Theory of Pressure Oscillations in Liquid Fueled Ramjet Engines. (U)

DESCRIPTIVE NOTE: Interim rept., 83 9P Culick, F. E. C.; Yang, V.

CONTRACT: AFOSR-80-0265

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR-83-0600

## UNCLASSIFIED REPORT

ABSTRACT: Low frequency pressure oscillations in ramjet engines are treated within the one-dimensional approximation. The engine is treated in two parts: the inlet section, containing relatively high speed flow, and the combustion chamber. A linearized analysis of a normal shock exposed to acoustic waves provides the upstream boundary condition. Most of the work reported was concerned with the combustion chamber. A simple model of the steady flow in a dump combustor has been worked out, comprising three regions: the flow of unburnt reactions; the region containing products of combustion; and the recirculation zone. Combustion is assumed to occur in an infinitely-thin sheet; an infinitesimally thin shear layer separates the recirculation zone from the remainder of the flow field. Acoustic fields in the inlet and the combustion chamber are formed separately and joined at the dump plane to provide a transcendental equation for the computer wave number. Results for the frequencies of oscillations and the pressure distributions compare well with experimental data taken at the Naval Weapons Center, China Lake. Some preliminary results are given for the unsteady behavior of a normal shock wave in a diffuser, calculated with a modified form of a computer program obtained from AFRL.

DESCRIPTORS: \*Combustion, \*Ramjet engines, Pressure distribution, Oscillation, Low frequency, Combustion stability, Combustion chambers, Pressure, Steady flow, Ramjet inlets, High velocity, Diffusers, Shock waves, Acoustic wave IDENTIFIERS: Recirculating flow, Combustion (U)

AD-A130 882

## UNCLASSIFIED

PAGE

34

AD-A130 857

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 857 20/12 7/4

DELAWARE UNIV NEWARK

Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K) HgC<sub>8</sub> and (Rb,K) HgC<sub>8</sub>. (U)

DESCRIPTIVE NOTE: Technical rept., JUN 81 3P Alexander, M. Grayson; Guerard, D.; Lagrange, P.; Makrini, M. El; Onn, David G.;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0589

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Biennial Conference on Carbon (15th), p14-15, 22-23 Jun 81. Reprint: Superconductivity and Phonon Specific Heat of the Alkali Metal Mercurographitides (Rb,K) HgC<sub>8</sub> and (Rb,K) HgC<sub>8</sub>.

DESCRIPTORS: \*Graphite, \*Superconductivity, \*Specific heat, Alkali metals, Temperature, Phonons, Spectrum analysis, Mercury compounds, Reprints (U)  
IDENTIFIERS: \*Metal mercurographitides, WUAFOSR2306C3, PE61102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 106 12/1 9/2

STATE UNIV OF NEW YORK AT BUFFALO AMHERST DEPT OF COMPUTER SCIENCE

Approaches to Automatic Strategy Analysis and Synthesis. (U)

DESCRIPTIVE NOTE: Final rept. on Phase 1, 1 Jul 81-31

Aug 82, SEP 82 8P Findler, Nicholas V. ;

CONTRACT: AFOSR-81-0220

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0592

UNCLASSIFIED REPORT

ABSTRACT: The efforts of the research group for Computer Studies of Strategies centered on three long-term projects: (1) The Generalized Production Rules System (GPRS) is a program which can support decision-making for a variety of expert systems in need of estimates of hidden variables. Hidden variables are such that their values can be identified only at certain times, either intermittently or periodically. In contrast, open variables are readily measurable at any time. The estimation is based on stochastic, causal relations between hidden and open variables. (2) The Quasi-Optimizer System (QO) is a program which observes and measures adversaries' behavior in confrontations, infers their strategies, and constructs a descriptive theory, i.e., a model of each. It then identifies the components of the strategies, evaluates their effectiveness and combines the most satisfactory ones into a normative theory which is an optimum strategy in the statistical sense. (3) The Advice Taker/Inquirer System (AT/I) is a program which can be taught strategies by a human advisor. The advisor provides principles and high-level examples of actions in different situations. The system applies the strategy to test, verify and optimize the strategy. (Author) (U)

DESCRIPTORS: \*Statistical analysis, \*Decision making, \*Computer applications, \*Automatic, \*Strategy, Variables, Optimization, Observation, Test and evaluation, Theory, Parts, Normality, Measurement, Fault tree analysis, Estimates. (U)

IDENTIFIERS: Normative theory, Decision trees, (U)

AD-A130 806

UNCLASSIFIED

PAGE

35

AD-A130 791

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 791 5/1 5/2 9/3

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES ELECTRONIC SCIENCES LAB

Research in Electronics: Joint Services Electronics Program. (U)

DESCRIPTIVE NOTE: Annual technical rept. 1 Apr 82-31 Mar 83.

APR 83 140P Steier, William H. ;

CONTRACT: F49620-81-C-0070

PROJ: 2305

TASK: A9

MONITOR: AFOSR TR-83-0617

UNCLASSIFIED REPORT

ABSTRACT: This annual technical report summarizes accomplishments and progress of fifteen (15) projects (work units) which were active during all or part of the reporting period of 1 April 1982 to 31 March 1983 under contract F49620-81-C-0070 at the Electronic Sciences Laboratory of the University of Southern California under the Joint Services Electronics Program. (U)

DESCRIPTORS: \*Research management, \*Electronics, \*Reports, Quantum electronics, Solid state electronics, Lasers, Semiconductors, Signal processing, Computers, Optics, Data bases (U)

IDENTIFIERS: PEB1102F, WUAF05R2305A9 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 782 12/1 11/4 20/11

DREXEL UNIV PHILADELPHIA PA DEPT OF MECHANICAL ENGINEERING  
AND MECHANICSFracture Mechanics of Sub-Laminate  
Cracks. (U)DESCRIPTIVE NOTE: Interim rept. 1 Sep 79-30 Sep 82,  
OCT 82 220P Wang, A. S. D.; Crossman,  
F. W.;

CONTRACT: F49620-79-C-0206

PROJ: 2307

TASK: B2

MONITOR: AFOSR TR-83-0594

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with  
Lockheed Missiles and Space Co., Inc., Palo  
Alto, CA. Research Lab.ABSTRACT: A monograph is presented which details  
the analysis and experiment on the mechanics of sub-  
laminate crack propagation in polymer-based composite  
laminates. The analytical approach is based on the  
energy release rate concept of the classical fracture  
mechanics, in conjunction with a numerical crack  
propagation simulation technique using finite  
elements. Main emphasis is placed on statically  
induced cracks, although fatigue induced cracks are  
also discussed. (Author)DESCRIPTORS: \*Finite element analysis, \*Composite  
materials, \*Epoxy laminates, \*Polymers,  
\*Fracture(Mechanics), Crack propagation,  
Fatigue(Mechanics), Energy transfer,  
Bases(Chemistry), Structural properties  
IDENTIFIERS: PE61102F, WUAFOSR230782 (U)

AD-A130 782

UNCLASSIFIED

PAGE

36

AD-A130 776

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 776 20/12 20/2

FLORIDA UNIV GAINESVILLE DEPT OF ELECTRICAL  
ENGINEERINGStudy of Deep-Level Defects and Transport  
Properties vs Growth Parameters and Annealing  
Conditions in III-V Compound  
Semiconductors. (U)DESCRIPTIVE NOTE: Annual technical rept. 11 Jun 82-10  
Jun 83,

JUN 83 111P Li, Sheng S.;

CONTRACT: AFOSR-81-O187

PROJ: 2308

TASK: B1

MONITOR: AFOSR TR-83-0630

## UNCLASSIFIED REPORT

ABSTRACT: The objectives of this research program  
are: (1) To investigate the grown-in defects and  
the effects of thermal and laser annealing on the  
grown-in defects in LEC grown Zn-doped InP,  
(2) to study the transport properties in n-type  
InP, (3) to characterize the grown-in defects vs  
annealing temperature in the LEC grown GaAs,  
and compare the deep-level defects in the MOCVD  
grown GaAs on semi-insulating GaAs- and  
Ge- substrates, (4) to study the one-MeV  
electron radiation induced deep level defects in  
LPE grown GaAs and the effects of thermal  
annealing on these defects. Deep-level Transient  
Spectroscopy (DLTS) Capacitance-Voltage (C-  
V), Current-Voltage (I-V), Resistivity,  
and Hall effect measurements were employed to study  
the deep-level defects and transport properties vs  
growth parameters and annealing conditions in  
GaAs and InP specimens. (Author)  
DESCRIPTORS: \*Semiconductors, \*Group III  
compounds, \*Group V compounds, \*Annealing,  
Electron mobility, \*Crystal growth, Transport  
properties, Defects(Materials), Depth, Gallium  
arsenides, Indium phosphides, Epitaxial growth,  
Electron density, Trapping(Charged  
Particles)  
IDENTIFIERS: PE61102F, WUAFOSR230681 (U)(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 770 5/1 9/3

SOUTHEASTERN CENTER FOR ELECTRICAL ENGINEERING EDUCATION  
INC ST CLOUD FLUSAF/SCEEE Summer Faculty Research Program  
(1982). Research Reports. Volume 2.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 82 780P Peele, Warren D. ; Steele,

Earl L. ;

CONTRACT: F49620-82-C-0035

PROJ: 2301

TASK: D5

MONITOR: AFOSR TR-83-0614

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A130  
769.

ABSTRACT: For abstract see AD-A130 769.

DESCRIPTORS: \*Research management, Electrical  
engineering, Air Force research, Scientists,  
Instructions, Air Force facilities,

Laboratories, Instructors, Universities,

Recruiting, Selection, Reports, Abstracts

IDENTIFIERS: PEG1102F, WUAFOSR230125

(U)

(U)

(U)

AD-A130 770

UNCLASSIFIED

PAGE

37

AD-A130 769

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 769 5/1 9/3

SOUTHEASTERN CENTER FOR ELECTRICAL ENGINEERING EDUCATION  
INC ST CLOUD FLUSAF/SCEEE Summer Faculty Research Program.  
Research Reports. Volume 1.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 82 933P Peele, Warren D. ; Steele,

Earl L. ;

CONTRACT: F49620-82-C-0035

PROJ: 2301

TASK: D5

MONITOR: AFOSR TR-83-0613

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A130  
770.

ABSTRACT: The United States Air Force

Summer Faculty Research Program (USAF-

SFRP) is a program designed to introduce

university, college, and technical institute faculty

members to Air Force research. This is

accomplished by faculty competition on a nationally

advertised competitive basis for a ten-week

assignment during the summer intersession to perform

research at Air Force laboratories/centers.

Each assignment is in a subject area and at an

Air Force facility mutually agreed upon by the

faculty member and the Air Force. In addition

to compensation and travel expenses, a cost of living

allowance is also paid. The USAF-SFRP is

sponsored by the Air Force Office of

Scientific Research/Air Force Systems

Command, United States Air Force, and is

conducted by the Southeastern Center for

Electrical Engineering Education(SCEEE).

(Author)

(U)

DESCRIPTORS: \*Research management, \*Electrical

engineering, Air Force research, Scientists,

Instructions, Air Force facilities, Laboratories,

Selection, Reports, Abstracts

(U)

(U)

IDENTIFIERS: PEG1102F, WUAFOSR2301D5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 768

5/9

SOUTHEASTERN CENTER FOR ELECTRICAL ENGINEERING EDUCATION  
INC ST CLOUD FLUSAF/SCEE Summer Faculty Research Program  
(1982). Management Report. (U)

DESCRIPTIVE NOTE: Final rept.,

OCT 82 165P Peele, Warren D. ; Steele,

Earl L. ;

CONTRACT: F49620-82-C-0035

PROJ: 2301

TASK: D5

MONITOR: AFOSR TR-83-0612

UNCLASSIFIED REPORT

ABSTRACT: The program provides opportunities for research in the physical sciences, engineering, life sciences, business, and administrative sciences. The program has been effective in providing basic research opportunities to the faculty of universities, colleges, and technical institutions throughout the United States. (Author)

DESCRIPTORS: \*Students, Air Force Training, Education, Research management, Human resources, Physical sciences, Engineering, Life sciences, Public administration, Air Force facilities, Air Force planning

IDENTIFIERS: Pilot programs, PE61102F, WUAFOSR230105

(U)

(U)

(U)

AD-A130 768

UNCLASSIFIED

PAGE

38

AD-A130 767

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 767

5/9

SOUTHEASTERN CENTER FOR ELECTRICAL ENGINEERING EDUCATION  
INC ST CLOUD FLUSAF/SCEE Graduate Student Summer Support  
Program (1982). Management and Technical  
Report. (U)

DESCRIPTIVE NOTE: Final rept.,

OCT 82 383P Peele, Warren D. ; Steele,

Earl L. ;

CONTRACT: F49620-82-C-0035

PROJ: 2301

TASK: D5

MONITOR: AFOSR TR-83-0611

UNCLASSIFIED REPORT

ABSTRACT: A pilot program for graduate Student Summer Support via the AFOSR Summer Faculty Research Program (SFRP) was initiated by contract modification on 26 March 1982. The program was developed as an adjunct effort to the SFRP. Its purpose is to provide funds for selected graduate students to work at an appropriate Air Force Laboratory or Center with a supervising professor who holds a concurrent SFRP appointment. Although only 16 positions were budgeted, SCEE appointed 17 graduate students who represented fifteen schools and ten disciplines in science and engineering. (Author)

DESCRIPTORS: \*Students, \*Air Force training, Education, Research management, Human resources, Physical sciences, Engineering, Life sciences, Public administration, Air Force facilities, Air Force planning

IDENTIFIERS: Pilot programs, PE61102F, WUAFOSR230105

(U)

(U)

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 758 8/7 17/9 8/11 14/5

PENNSYLVANIA STATE UNIV UNIVERSITY PARK

Lateral Variations in Geologic Structure and  
Tectonic Setting from Remote Sensing  
Data.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Mar 80-30 Sep 82.

MAY 83 231P Alexander, Shelton S. ;

CONTRACT: AFOSR-77-3340

PROJ: A032

TASK: 91

MONITOR: AFOSR TR-83-0610

UNCLASSIFIED REPORT

**ABSTRACT:** The principal objective of this study was: (1) to assess the usefulness of remote sensing digital imagery, principally LANDSAT multispectral scanning (MSS) data, for inferring lateral variations in geologic structure and tectonic setting; and (2) to determine the extent to which these inferred variations correlate with observed variations in seismic excitation from underground nuclear explosion test sites in the Soviet Union, Soviet, French and U.S. test sites have been investigated to compare their geologic and tectonic responses as seen by LANDSAT. The characteristics of 'granite' intrusive bodies exposed at Semipalatinsk (Degelen), North Africa (Hoggar), NTS (Climax stock), and an analog site in Maine (Mt. Katahdin), have been studied in detail. The tectonic stress field inferred from the tectonic release portion of seismic signatures of explosions in these three areas is compared with local and regional fracture patterns discernable from imagery. The usefulness of satellite synthetic aperture radar (SAR) to determine geologic conditions and delineate fault (fracture) patterns is demonstrated by the analysis of SEASAT data for an area in the eastern United States. Algorithms to enhance structural boundaries and to use textures to identify rock types were developed and applied to several test sites. (Author)

(U)

**DESCRIPTORS:** \*Structural geology, \*Image processing, \*Tectonics, \*Pattern recognition, Remote detectors, Spaceborne, Seismic signatures, Granite, Faults (Geology), Scanning, Multiband spectral reconnaissance, Radar images, Synthetic

(U)

(U)

**IDENTIFIERS:** LANDSAT, Multispectral scanning,

AD-A130 758

UNCLASSIFIED

PAGE

39

AD-A130 755

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 755 17/7 18/4

STANFORD UNIV CA

Background Information on the He(3) Nuclear  
Gyroscope.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Jun 78-30

Apr 82,

FEB 83 72P Fairbank, William M. ;

CONTRACT: F49620-78-C-0088

PROJ: 2305

TASK: B2

MONITOR: AFOSR TR-83-0597

UNCLASSIFIED REPORT

**ABSTRACT:** During the contract period the background necessary to proceed with the assembly and testing of the precision He(3) nuclear gyroscope was completed. This background work included experiments on He(3)-He(4) liquid and gas mixtures in a prototype apparatus which was modified to provide additional information useful to the He(3) gyroscope research program. The precision quartz He(3) gyroscope was designed, constructed and delivered during the period as were the components of the airlock and cryostat probe assembly. A new ultra-low magnetic field shield was made which achieved 2 x 10 to the 8th power/G over the volume necessary for the He(3) gyroscope. This not only exceeds the nominal requirements of the He(3) gyroscope, but is the lowest magnetic field region ever made. An engineering Ph.D thesis was completed by Captain Gerald Shaw, working with professor Daniel DeBra, on a theoretical analysis of the cross-axis response of a three-axis He(3) gyroscope and on kinematic rectification in a nuclear gyro. (Author)

(U)

**DESCRIPTORS:** \*Gyroscopes, Nuclear instrumentation, Nuclear magnetic resonance, Cryogenics, Optical pumping, Helium, Gases

(U)

**IDENTIFIERS:** Nuclear gyroscopes, PE81102F,

(U)

WUAFOSR230582

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 749 12/1

ARIZONA STATE UNIV TEMPE GROUP FOR COMPUTER STUDIES OF STRATEGIES

A Note on the Functional Estimation of Values of Hidden Variables --- An Extended Module for Expert Systems.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
82 46P Findler, Nicholas V. ;Lo,

Ron ;

CONTRACT: AFOSR-82-0340

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0593

## UNCLASSIFIED REPORT

ABSTRACT: The paper describes an extension of the author's work on the Generalized Production Rules System. In its original form, it could estimate at a given point of time or space the value of hidden variables -- variables that can be measured only intermittently or periodically. In contrast, open variables are readily measurable any time. The system establishes stochastic, causal relations, generalized production rules, between known values of hidden variables and certain mathematical properties of the open variables' behavior. These rules are then used to make the point estimates. The authors have now provided the system with the additional ability to estimate the functional behavior of the hidden variables. The system can serve as a domain-independent module to a knowledge-based expert system in need of such numerical estimates. (U)

DESCRIPTORS: \*Variables, \*Estimates, Value, Numerical analysis, Strategy, Decision making, Distribution functions, Computer files,

Instructions

IDENTIFIERS: \*Expert systems, \*Hidden variables, GPRS(Generalized Production Rules System),

WUAFOSR2304A2, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 748 20/8

OREGON UNIV EUGENE

Atomic Inner-Shell Transitions---Theory and the Need for Experiments,

(U)

APR 83 5P Crasemann, Bernd ;  
CONTRACT: F49620-83-K-0020, AFOSR-79-0026

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0621

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Nuclear Science, VNS-30 n2 p887-890 Apr 83.  
Reprint: Atomic Inner-Shell Transitions---Theory and the Need for Experiments.

DESCRIPTORS: \*Atomic energy levels, \*Translations, \*Theory, Atomic orbitals, Physics, X rays, Reprints

(U)

IDENTIFIERS: Atomic inner levels, Atomic physics, WUAFOSR2301A4, PE61102F

(U)

AD-A130 749

UNCLASSIFIED

PAGE

40

AD-A130 748

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 747 20/11

NORTHWESTERN UNIV EVANSTON IL

A Plasticity Model for Flow of Granular  
Materials under Triaxial Stress States.

(U)

82 36P Dorris, J. F. ; Nemat-

Nasser, S. ;

CONTRACT: AFOSR-80-0017

PROJ: 2307

TASK: C1

MONITOR: AFOSR TR-83-0606

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Solids and  
Structures, v18 n6 p497-531 1982.  
Reprint: A Plasticity Model for Flow of Granular  
Materials under Triaxial Stress States.DESCRIPTORS: \*Plastic properties, Triaxial stresses,  
Theory, Models, Stresses, Pressure,  
Sensitivity, Mathematical models, Reprints  
IDENTIFIERS: WUAFOSR2307C1, PE61102F(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 742 12/1

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL  
ENGINEERINGA Statistical Study of Fabric in a Random  
Assembly of Spherical Granules.

(U)

82 20P Oda, M. ; Nemat-Nasser, S. ;

Mehrabadi, M. M. ;

CONTRACT: AFOSR-80-0017

PROJ: 2307

TASK: C1

MONITOR: AFOSR TR-83-0607

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in International Jnl. for  
Numerical and Analytical Methods in Geomechanics,  
v6 p77-94 1982.  
Reprint: A Statistical Study of Fabric in a Random  
Assembly of Spherical Granules.DESCRIPTORS: \*Statistical analysis, \*Fabrics,  
\*Spheres, \*Granules, Random variables,  
Reprints

(U)

IDENTIFIERS: Random assembly, PE61102F,

(U)

WUAFOSR2307C1

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 729 20/14 20/6

NORTH TEXAS STATE UNIV DENTON DEPT OF PHYSICS

Coherent Propagation and Sum Frequency  
Generation into the Vacuum Ultraviolet.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Nov 81-31 Oct 82.

OCT 82 15P Diels, Jean-Claude ;

CONTRACT: AFOSR-82-0044

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR 83-0595

UNCLASSIFIED REPORT

ABSTRACT: An experimental and theoretical study of resonant coherent four wave mixing has been initiated. Prior theoretical investigation by the author has demonstrated that coherent propagation effects can be used to keep all the energy in the radiation field, even in the presence of resonant absorption. An energy conversion efficiency of 6% was predicted for third harmonic conversion in lithium to 190 nm. In the period covered, (1)

Constructed a dye laser amplifier, and achieved an output of 1 mJ for wavelengths covering the most important resonances of lithium (571 nm, 672 nm, 639 nm); (2) Purchased and assembled the hardware of a data acquisition system to accurately characterize each pulse (amplitude, duration, phase modulation) and perform the measurement of two photon absorption and third harmonic as a function of the relative phase and delay in the pulse sequence; (3) Investigated the feasibility of increasing the conversion efficiency through the use of natural or induced autoionizing resonances; and (4) Made a theoretical study of the influence of coherence on three photon ionization in lithium.

DESCRIPTORS: \*Coherent electromagnetic radiation, \*Wave propagation, \*Vacuum ultraviolet radiation, Metal vapors, Photons, Harmonic generators  
IDENTIFIERS: Photon absorption, PE61102F,  
WUAFOSR2301A1

(U)

(U)

(U)

AD-A130 729

UNCLASSIFIED

PAGE

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 727 20/3 20/14 18/4 20/6

CALIFORNIA UNIV IRVINE DEPT OF PHYSICS

The Interaction of Electromagnetic Radiation  
with Solid Materials.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 78-31 Dec 82.

JUN 83 10P Maradudin, Alexei A. ; Mills,

D. L. ;

CONTRACT: F49620-78-C-0019

PROJ: 2306

TASK: C2

MONITOR: AFOSR TR-83-0618

UNCLASSIFIED REPORT

ABSTRACT: Results are reported which were obtained during a theoretical program on the interaction of electromagnetic waves with solids. The report places special emphasis on the 1982 calendar year, which is the final year of the program. We have explored, during the tenure of the program a variety of interactions which influence the (linear) response of solids to external electromagnetic radiation, with emphasis on the frequency regime which extends from the visible, through the infrared and down to the microwave. Examples are the study of intrinsic free carrier scattering mechanisms in doped, polar materials, where our theory provides an excellent account of data with no adjustable parameters.

Also, the scattering of electrons from phonons and other electrons in the near proximity of the surface, and their influence on the microwave response of metals has been explored. The last few years of the program saw increasing emphasis on the propagation of waves along interfaces with nonplanar profile (rough surfaces, periodic grating structures), and on the nonlinear interaction between waves in the near vicinity of planar, and nonplanar interfaces. In this body of work, perturbation theoretic methods were developed, which treat the deviations from a perfectly flat profile as small, and also we had considerable success with nonperturbative methods applied to periodic structures possibly of large amplitude.

(U)

DESCRIPTORS: \*Electromagnetic radiation, \*Surface roughness, \*Optical properties, \*Solids, Diffraction analysis, Photons, Surface waves, Theory, Microwaves, Frequency response,  
IDENTIFIERS: Surface responses, Surface

(U)

(U)

AD-A130 727

UNCLASSIFIED

42

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 715 7/4 20/8

HULL UNIV (ENGLAND)

Surface Termination in Chain Reaction and the  
Interaction with Homogeneous Termination, (U)

81 16P Baldwin, Ray R.; Howarth,

John A. ; AFOSR-77-3215

CONTRACT: 2308

TASK: B2

MONITOR: AFOSR TR-83-0604

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Society  
Faraday Trans 1, v78 p451-464 1982.  
Reprint: Surface Termination in Chain Reactions  
and the Interaction with Homogeneous Termination.DESCRIPTORS: \*Surface chemistry, \*Reaction kinetics,  
\*Chain reactions, Experimental data, Constants, (U)

Rates, Reprints

IDENTIFIERS: Surface termination, Spherical  
vessels, Chain termination, PE61102F, (U)

WUAFOSR2308B2

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 714 20/4

VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT  
OF AEROSPACE AND OCEAN ENGINEERINGAtomization of Impinging Liquid Jets in a  
Supersonic Crossflow, (U)DESCRIPTIVE NOTE: Rept. for 1 Dec 81-30 Nov 82,  
FEB 83 5P Hewitt, P. W. ; Schetz, J.

A. ;

CONTRACT: AFOSR-82-0159

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR-83-0599

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in AIAA Jnl., v21 n2 p178-179  
Feb 83.Reprint: Atomization of Impinging Liquid Jets in a  
Supersonic Crossflow.

DESCRIPTORS: \*Liquid jets, \*Atomization,

Supersonic flow, Sprays, Gas flow, High  
velocity, Injection, Cross flow, Transverse,

Injectors, Drops, Plumes, Reprints

IDENTIFIERS: PE61102F, WUAFOSR2308A2 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 707 20/13

PURDUE UNIV LAFAYETTE IN THERMOPHYSICAL PROPERTIES RESEARCH LAB

Thermophysical Property Determinations Using Transient Techniques. (U)

DESCRIPTIVE NOTE: Annual rept. 15 Feb 82-15 Feb 83, APR 83 10P Taylor, R. E.; Shoemaker, R. L.; Koshigoe, L. G.;

REPT. NO. TPRL-317

CONTRACT: F49620-81-K-0011

PROJ: 2308

TASK: A1

MONITOR: AFOSR TR-83-0605

## UNCLASSIFIED REPORT

ABSTRACT: In this program, determinations of the thermophysical properties of HMX, RDX and AP are being made. Two thermal properties are being measured: (1) specific heat and (2) thermal diffusivity. The product of these results and the densities of the propellants, yields the thermal conductivity of the material. Specific heat as a function of temperature for single crystals of HMX in both their beta and delta phases have been completed. Delta phase results were obtained using two techniques: (1) short range results from 477-486 degrees K just after the phase transition (beta to delta), and (2) extended range results from 415-485 degrees K. The second technique was possible due to hysteresis in the conversion of delta-HMX back to beta-hmx following cooling from above the phase transition temperature. The delta phase results for a powdered blend of HMX were obtained and yielded good agreement of the single crystals. Also, the specific heat of HMX inter-mixed with decomposition products was found to be slightly larger than for pure HMX. (U)

DESCRIPTORS: \*Thermophysical properties, \*Transients, \*Methodology, Single crystals, Specific heat, RDX, HMX, Ammonium perchlorate, Thermal conductivity, Thermal diffusion, Solid propellants (U)

IDENTIFIERS: PEB1102F, WUAFOSR2308A1 (U)

AD-A130 707

UNCLASSIFIED

PAGE

44

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 706 20/4 14/2 21/5 21/2

VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT OF AEROSPACE AND OCEAN ENGINEERING

Transverse Jet Break-up and Atomization with Rapid Vaporization along the Trajectory. (U)

DESCRIPTIVE NOTE: Interim rept. 1 Dec 81-30 Nov 82, JAN 83 13P Hewitt, P. W.; Schetz, J. A.;

CONTRACT: AFOSR-82-0159

PROJ: 2308

TASK: A2

MONITOR: AFOSR TR-83-0602

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Proceedings of the AIAA Aerospace Sciences Meeting (21st), Reno, Nevada, 10-13 Jan 83, Paper AIAA-83-0419.

ABSTRACT: A simulation approach to studying hot flow subsonic cross-stream fuel injection problems in a less complex and costly cold flow facility was developed and implemented. A typical ramjet combustion chamber fuel injection problem was posed where ambient temperature fuel (Kerosene) is injected into a hot airstream. This case was transformed through two new similarity parameters involving injection and freestream properties to a simulated case where a chilled injectant is injected into an ambient temperature airstream. Experiments for the simulated case using chilled Freon-12 injected into the Virginia Tech 23 x 23 cm. blow-down wind tunnel at a freestream Mach number of 0.44 were run. The freestream stagnation pressure and temperature were held at 2.5 atm. and 300 K respectively. The resulting spray plume was carefully examined and documented with photographs and droplet measurements. The results showed a clear picture of the mechanisms of jet decomposition in the presence of rapid vaporization. Immediately after injection a vapor cloud was formed in the jet plume, which dissipated downstream leaving droplets on the order of 8 to 10 microns in diameter for the conditions examined. This represents a substantial reduction compared to baseline tests run at the same conditions with water which had little vaporization. (U)

DESCRIPTORS: \*Fuel injection, \*Atomization, \*Jet mixing flow, Transverse, Cross flow, Sprays, IDENTIFIERS: Transverse injection, Freon-12, Je (U)

AD-A130 706

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 705 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PRECESSES

Weak and Strong Law Results for a Function of the Spacings. (U)

DESCRIPTIVE NOTE: Technical rept., McCormick, William P. ;  
 MAY 83 16P  
 REPT. NO. TR-30  
 CONTRACT: F49620-82-C-0009  
 PROJ: 2304  
 TASK: A5  
 MONITOR: AFOSR TR-83-0627

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Order statistics, \*Distribution functions, Permutations, Random variables, Statistical samples, Numbers, Asymptotic series, Theorems, Stationary, Limitations  
 IDENTIFIERS: \*Spacings, PE61102F, WUAFOSR2304A5 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 699 21/9.1 21/4 22/2

VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT OF AEROSPACE AND OCEAN ENGINEERING

Breakup and Droplet Formation of Slurry Jets. (U)

DESCRIPTIVE NOTE: Rept. for 1 Dec 81-30 Nov 82, JAN 83 16P Ogg, John C. ; Schetz, Joseph A. ;  
 CONTRACT: AFOSR-82-0159  
 PROJ: 2308  
 TASK: A2  
 MONITOR: AFOSR TR-83-0601

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings of AIAA Aerospace Sciences Meeting (21st), pl-13, 10-13 Jan 83.  
 Reprint: Breakup and Droplet Formation of Slurry Jets. (U)  
 DESCRIPTORS: \*Slurry fuels, \*Aerospace systems, \*Atomization, Boron, Petroleum products, Reprints  
 IDENTIFIERS: Slurry jets, Petroleum slurry fuels, PE61102F, WUAFOSR2303A2 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 691 20/6 20/2 20/10

MARYLAND UNIV COLLEGE PARK. DEPT OF PHYSICS AND ASTRONOMY

Coherent Scattering of Light into High Frequency Radiowaves.

(U)

DESCRIPTIVE NOTE: Annual rept. 1 Feb 82-31 Jan 83, MAR 83 39P Weber, J. ;

CONTRACT: AFOSR-82-0164

PROJ: 2301

TASK: AB

MONITOR: AFOSR TR-83-0615

## UNCLASSIFIED REPORT

ABSTRACT: The coherent radiation interaction, and scattering, by nuclei of a crystal for which each volume element has the same sign of the interaction with an incident beam, and for which the coupling of scatters with each other is important, is computed. Experiments are described which appear to verify the theory. (Author)

(U)

DESCRIPTORS: \*Electromagnetic scattering, \*Frequency dividers, \*Coherent scattering, \*Single crystals, \*Nuclear scattering, Laser beams, Helium neon lasers, Operators(Mathematics), Photons, Phase shift, Nuclear magnetic moments, Magnetic fields, Scattering cross sections, Cryogenics, Photometers, Volume, Interactions, Nuclei, Momentum, Infrared radiation, Silicon, Light, Nuclear moments, Energy, Quantum theory, Sapphire, Radio waves

(U)

IDENTIFIERS: Lithium fluorides, Recoil energy, Physical optics, Scarlet lasers, Coherent scattering, Compton wavelength, Cration operators, Liquid helium, Annihilation operators, Weber scattering, PE81102F, WUAFOSR2301A8

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 686 12/1

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

Rejection of Multivariate Outliers.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAY 83 31P Sinha,Bimal Kumar ;

REPT. NO. TR-83-08

CONTRACT: F49620-82-K-0001

MONITOR: AFOSR TR-83-0628

## UNCLASSIFIED REPORT

ABSTRACT: An extension of Ferguson's univariate normal results for rejection of outliers is made to the multivariate case with mean slippage. The formulation is more general than that in Schwager and Margolin and the approach is also different. The main result can be viewed as a robustness property of Mardia's locally optimum multivariate normal kurtosis test to detect outliers against nonnormal multivariate distributions.

(U)

DESCRIPTORS: \*Multivariate analysis, Normal distribution, Invariance, Transformations(Mathematics), Matrices(Mathematics), Probability distribution functions, Statistical analysis, Modification, Statistical inference, Computations, Rejection, Mathematical models

(U)

IDENTIFIERS: \*Outliers, Kurtosis, Robust procedures, PE81102F

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN35A

AD A130 683 7/3 11/3

HULL UNIV (ENGLAND) DEPT OF CHEMISTRY

The Decomposition of 2,2,3,3-Tetramethylbutane  
in KCl- and B2O3 Coated Vessels in the  
Presence of Oxygen.

(U)

82 14P Baldwin, Roy R., Hisham,  
Mohamed W. M., Keen, Alan, Walker, Raymond W.

CONTRACT: AFOSR-77 3215  
PROJ: 2308  
TASK: B2  
MONITOR: AFOSR TR 83-0603

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Chemical  
Society Faraday Trans. 1 v78 p1165-1176 1982.  
Reprint: The Decomposition of 2,2,3,3-  
Tetramethylbutane in KCl- and B2O3-Coated  
vessels in the Presence of Oxygen.

DESCRIPTORS: Decomposition, \*Butanes, \*Methyl  
radicals, \*Coatings, Test and evaluation, Entropy,  
Enthalpy, Reprints

(U)

IDENTIFIERS: TMB(Tetramethylbutane), Arrhenius  
parameters, Rate constants, PE61102F,  
WUAFOSR2308B2

(U)

AD-A130 683

UNCLASSIFIED

PAGE

47

AD-A130 682

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A130 682 12/1 14/4 13/9

DELAWARE UNIV NEWARK DEPT OF MATHEMATICAL SCIENCES

Reliability Analysis of a Parallel System  
with Exponential Life Times and Phase Type  
Repairs.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
83 10P Chakravarthy, S.;  
CONTRACT: AFOSR-77-3236, NSF-ENG79-08351

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0625

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in OR Spektrum v5 p25-32  
1983.  
Reprint: Reliability Analysis of a Parallel System  
with Exponential Life Times and Phase Type  
Repairs.

DESCRIPTORS: \*Mathematical models, \*Reliability,  
\*Mechanical components, Repair,  
Failure(Mechanics), Probability distribution  
functions, Algorithms, Reprints

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304A5

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 678 12/1 20/4

TENNESSEE UNIV KNOXVILLE DEPT OF MATHEMATICS

Mixed Finite Element Methods with  
Applications to Flow and Other Problems.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 80-31 Mar 83.  
MAY 83 17P Gunzburger, Max D. ;

CONTRACT: AFOSR-80-0083

PROJ: 2304

TASK: A3

MONITOR: AFOSR TR-83-0624

UNCLASSIFIED REPORT

ABSTRACT: The thrust of this work was the development of efficient and accurate finite element methods for flow problems. Specific applications include periodic acoustic problems, potential flow problems and incompressible viscous flows. However, the theoretical analyses carried out also have a direct bearing on the approximation of problems in other areas, e.g., electromagnetics and elasticity. For the particular fluids applications mentioned above, computer codes implementing the algorithms have also been developed.

(U)

DESCRIPTORS: \*Flow, \*Finite element analysis, Eigenvalues, Navier Stokes equations, Least squares method, Acoustics, Potential flow, Viscous flow, Incompressible flow, Fluid mechanics, Computations, Problem solving, Algorithms

(U)

(U)

IDENTIFIERS: PE81102F, WUAFOSR2304A3

AD-A130 678

UNCLASSIFIED

PAGE

48

AD-A130 665

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 665 12/1 20/1

LA JOLLA INST CA CENTER FOR THE STUDY OF NONLINEAR  
DYNAMICSScattering of Waves by Irregularities in  
Periodic Discrete Lattice Spaces. 2.  
Calculations.

(U)

DESCRIPTIVE NOTE: Interim rept.,

83 40P

Elliot W. ; West, Bruce J. ;  
Pomphrey, Neil ; Montroll,

REPT. NO. LJI-R-83-229

CONTRACT: F49620-81-K-0017

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0633

UNCLASSIFIED REPORT

ABSTRACT: The general formalism for the exact scattering of a scalar wave from N scatterers on a discrete lattice is reviewed. The interpretation of the exact solution in terms of approximation techniques is given and the expression for the scattering cross sections is derived. The expressions necessary for the calculation of the lattice Greens function are discussed and a number of asymmetric scattering configurations are considered. (Author)

(U)

DESCRIPTORS: \*Computations, \*Greens function, \*Scalar functions, \*Acoustic scattering, \*Acoustic waves, Nondestructive testing, Cross sections, Finite element analysis, Discrete distribution, Models, Defects (Materials), Transverse waves, Elastic properties

(U)

(U)

IDENTIFIERS: Scalar waves, Lattice structure,

PE81102F, WUAFOSR2306A2

AD-A130 678

UNCLASSIFIED

PAGE

48

AD-A130 665

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 664 12/1 20/8

OREGON UNIV EUGENE

Relativistic Calculation of Atomic M-Shell  
Ionization by Protons. (U)

MAY 83 8P Chen, Mau Hsiung ; Crasemann,

Bernd ; Mark, Hans ;

CONTRACT: F49620 83 K 0020, AFOSR 79-0026

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR 83-0620

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review A, v27  
n5 p2358-2364 May 83.Reprint: Relativistic Calculation of Atomic M-  
Shell Ionization by Protons.DESCRIPTORS: Computations, \*Atomic energy levels,  
Ionization, Protons, X rays, Plane waves, (U)

Uranium, Gold, Holmium, Reprints

IDENTIFIERS: Relativistic calculations, Atomic  
shells, PE61102F, WUAFDSR2301A4 (U)

AD-A130 664

UNCLASSIFIED

PAGE

49

AD-A130 656

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 656 20/6

HUGHES RESEARCH LABS MALIBU CA

Investigation of Optical Fibers for Nonlinear  
Optics. (U)DESCRIPTIVE NOTE: Annual rept. no. 1. 1 Jan-31 Dec 82,  
FEB 83 46P DeShazer, Larry G. ;

Harrington, James A. ; Pastor, Antonio C. ;

Pastor, Ricardo C. ; Rand, Stephen C. ;

CONTRACT: F49620-82-C-0030

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR-83-0598

UNCLASSIFIED REPORT

ABSTRACT: The principal objective of this research  
program is to develop single crystal (SC) fibers  
for use in nonlinear optical devices. This  
encompasses measurement of physical and chemical  
properties of several candidate materials,  
fabrication of SC fibers, and demonstration of  
nonlinear optical applications. (Author) (U)DESCRIPTORS: \*Fiber optics, \*Optical materials,  
\*Nonlinear systems, Single crystals, Hybrid

systems, Research management, Measurement, (U)

Physical properties, Chemical properties

IDENTIFIERS: Optical fibers, Nonlinear optics, (U)

Candidate materials, PE61102F, (U)

WUAFSOR2301A1

AD-A130 664

UNCLASSIFIED

PAGE

49

AD-A130 656

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 228 3/2 20/6

LOUISIANA STATE UNIV BATON ROUGE OBSERVATORY

UBVRI Photometric Standard Stars around the  
Celestial Equator.

(U)

NOV 82 22P Landolt, Arlo U. ;

REPT. NO. CONTRIB-174  
CONTRACT: AFOSR-82-0192  
PROJ: 2301  
TASK: A2  
MONITOR: AFOSR TR-83-0587

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Astronomical Jnl., v88 n3  
p439-460 Mar 83.  
Reprint: UBVRI Photometric Standard Stars around the  
Celestial Equator.

DESCRIPTORS: \*Stars, Photometry, Intensity,

Color temperature, Night sky, Reprints

(U)

IDENTIFIERS: Celestial equator, UBVRI photometric  
standard, PEG1102F, WUAFOSR2301A2

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 224 20/13 11/6 7/4

MARQUETTE UNIV MILWAUKEE WI DEPT OF MECHANICAL  
ENGINEERINGProperties of Mercury-Cadmium-Telluride  
Solid Solutions.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 78-30 Jun 83.  
JUN 83 11P Brebrick, Robert F. ;

CONTRACT: AFOSR-78-3811

PROJ: 2306

TASK: C2

MONITOR: AFOSR TR-83-0585

## UNCLASSIFIED REPORT

ABSTRACT: Measurements of the partial pressures in  
the mercury-cadmium-tellurium system are indicated.  
The thermodynamic analysis of this system is  
briefly sketched. References to detailed accounts  
of these results are cited. There now exist  
sufficient data that this system is to a large extent  
thermodynamically characterized. Moreover, a  
thermodynamic model has been established that allows  
a quantitative reproduction of essentially all of  
what appears to be the reliable phase diagram,  
partial pressure, and general thermodynamic data.  
(Author)

(U)

DESCRIPTORS: \*Thermodynamic properties, \*Solid  
solutions, \*Cadmium, \*Mercury, \*Tellurides,  
Quantitative analysis, Reliability, Partial  
pressure, Phase diagrams, Chemical composition,  
Metals, Equations, Test methods

(U)

(U)

IDENTIFIERS: PEG1102F, WUAFOSR2306C2

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A130 218 9/1 12/1 5/1

YALE UNIV NEW HAVEN CT CENTER FOR SYSTEMS SCIENCE

Analysis of the Howells-Applebaum Algorithm in the Presence of Moving Interference. The Use of Lattice Filters in Adaptive Array Processors. Stability Analysis of LMS Adaptive Filters. Adaptive Array Processors with Moving Interference.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 82 15P Tuteur, Franz B. ;

REPT. NO. 8213

CONTRACT: AFOSR-80-0077

PROJ: 2304

TASK: AC

MONITOR: AFOSR TR-83-0561

## UNCLASSIFIED REPORT

ABSTRACT: Four ongoing projects are briefly described. These are: 1. Analysis of the Howells-Applebaum algorithm in the presence of moving interference; 2. The use of lattice filters in adaptive array processors; 3. Stability analysis of LMS adaptive filters; and 4. Adaptive array processors with moving interference treated from the frequency-domain point of view. Conclusions are: the Howells-Applebaum algorithm is so insensitive to interference motion that it is unnecessary to consider such motion in the design; and adaptive array processors based on the frequency-domain approach have a worst performance than those based on time-domain approaches mainly because of the time lag required in the operation of the Fourier transform operation. (Author)

(U)

DESCRIPTORS: \*Signal processing, \*Adaptive filters, \*Mathematics, \*Research management, Arrays, Interference, Fourier transformation, White noise, Noise reduction, Hydrophones, Stability

(U)

IDENTIFIERS: Howells applebaum algorithm,

Transversal filters, PE61102F,

(U)

WUAFOSR2304AC

AD-A130 218

UNCLASSIFIED

PAGE

51

AD-A130 217

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 217 12/1

SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

Maximum Likelihood Estimation of Unimodal and Decreasing Densities Based on Arbitrarily Right-Censored Data.

(U)

DESCRIPTIVE NOTE: Technical rept.,

82 14P McNichols, D. T. ; Padgett,

W. J. ;

CONTRACT: F49620-79-C-0140, AFOSR-81-0166

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0546

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Communications in Statistics: Theory and Methods: Simulation and Computation, v11 n20 p2259-2270 1982. Reprint: Maximum Likelihood Estimation of Unimodal and Decreasing Densities Based on Arbitrarily Right-Censored Data.

DESCRIPTORS: \*Maximum likelihood estimation, \*Probability density functions, Nonparametric statistics, Optimization, Reprints

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304A5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 192 7/3

DUKE UNIV DURHAM NC PAUL M GROSS CHEMICAL LAB

An Approach to Molecular Composites. (U)

DESCRIPTIVE NOTE: Final rept. 1 Apr 79-31 Dec 82,

DEC 82 9P Ulrich, Donald ;

CONTRACT: AFOSR-79-0080

PROJ: 2303

TASK: A3

MONITOR: AFOSR TR-83-0578

## UNCLASSIFIED REPORT

ABSTRACT: One objective was to demonstrate that a nematogen can be made to exhibit a cholesteric phase by the incorporation of chiral centers into the polymer chain. The Yamazaki reaction was used to introduce 3 mole percent of chiral L-valine into poly(p-benzamide). This was shown to form a lyotropic cholesteric phase by circular dichroism and the induced circular dichroism of an achiral dye. A disadvantage of the use of lyotropic mesomorphism was that few solvents were available and the production costs were high. The early lattice model treatment of Flory indicated that a highly extended molecular conformation was essential to the formation of this type of mesophase. It has been demonstrated that the melting point depression of a crystalline polymer by this type of mesophase will be quite small unless the polymer-solvent interaction is very favorable. This implies that the polymer solubility will only be sufficient for the formation of a lyotropic mesophase for those few polymer-solvent systems in which the interactions were very favorable. It was found that the Yamazaki phosphorylation reaction could be made to yield aromatic polyamides of higher inherent viscosity by using a monomer having pre-formed amide linkages. It is believed that this occurs due to reduction in the byproducts of the polymerization.

DESCRIPTORS: \*Polymers, \*Amides, Polyamide plastics, Films, Dichroism, Circular, Phosphorylation, Solubility, Copolymers, Copolymerization, High strength

IDENTIFIERS: Nematogens, Valine, Poly(p-benzamide), PE61102F, WUAFOSR2303A3

(U)

(U)

(U)

AD-A130 192

UNCLASSIFIED

PAGE

52

AD-A130 168

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 168 8/14

MCDONNELL DOUGLAS ASTRONAUTICS CO-HB HUNTINGTON BEACH CA

Sources of Surface Magnetic Field Variability. (U)

DESCRIPTIVE NOTE: Final rept.,, P. ;

APR 83 44P Olson, W. P. ;

CONTRACT: F49620-81-C-0001

PROJ: 2311

TASK: A1

MONITOR: AFOSR TR-83-0577

## UNCLASSIFIED REPORT

ABSTRACT: The contribution of non-ionospheric currents to the quiet daily variation in the earth's surface magnetic field (the sub Sq variation) is being reexamined. It has been found that the direct use of magnetospheric magnetic field models to represent the contribution of these currents to the surface field produces large errors. Thus direct integration over the currents was used. The induction problem was addressed and the contribution to sub Sq from currents induced in the earth's crust was determined. The total day to night contribution to sub Sq was found to be a minimum of 12 nanotesla. This contrasts with a measured variation of from 20 to 45 nanotesla. Thus the magnetospheric currents produce from about 1/4 to over 1/2 of the observed pattern. The Birkeland currents also contribute to sub Sq at sub-auroal latitudes. A study was initiated to examine the day to day variability in sub Sq using ground based magnetometer data and direct (satellite observations) of the solar wind. A means for experimentally determining the baseline for sub Sq (and the main field) was developed. (Author)

DESCRIPTORS: \*Geomagnetism, \*Magnetic fields, Surface waves, Diurnal variations, Graphs, Earth crust, Magnetosphere, Models, Solar wind

IDENTIFIERS: Surface field, PE61102F, WUAFOSR2311A1

(U)

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 163 12/1

DILAWARE UNIV NEWARK APPLIED MATHEMATICS INST

Asymptotic Methods in Reliability Theory: A Review.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 SEP 82 57P Gertsbakh, Ilya B. ;

REPT. NO. 808

CONTRACT: AFOSR-77-3236

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0548

UNCLASSIFIED REPORT

ABSTRACT: Section 1 of this paper reviews some works related to reliability evaluation of nonrenewable systems. The assumption that element failure rates are low allows to obtain an expression for the main term in the asymptotic representation of system reliability function. Section 2 is devoted to renewable systems. The main index of interest in reliability is the time to the first system failure. A typical situation in reliability is that the repair time is much smaller than the element lifetime. This fast repair property leads to an interesting phenomenon that for many renewable systems the time to system failure converges in probability, under appropriate norming, to exponential distribution. Some basic theorems explaining this fact are presented and a series of typical examples is considered. Special attention is paid to reviewing the works describing the exponentiality phenomenon in the birth-and-death processes. Some important aspects of computing the normalizing constants are considered, among them, the role played by so-called main event. Section 2 contains also a review on various bounds on the deviation from exponentiality. Sections 3, 4 describe some additional aspects of asymptotics in reliability. It is typical for the probabilistic models considered in these sections, that a small parameter is introduced in an explicit form into the characteristic of the random processes. A considerable part of this review is based on the sources which were originally published in Russian and are available in the English translation.

(Author)

(U)

DESCRIPTORS: \*Mathematical models, \*Numerical

AD-A130 163

UNCLASSIFIED

PAGE

53

AD-A130 160

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 160 20/10 20/5

CALIFORNIA INST OF TECH PASADENA DIV OF CHEMISTRY AND CHEMICAL ENGINEERING

The Quantum Dynamics of Chemical Reactions.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Jul 81-30  
 Jun 82,

MAR 83 489P

Kuppermann, Aron ;

CONTRACT: AFOSR-81-0235

PROJ: 2303

TASK: B1

MONITOR: AFOSR TR-83-0565

UNCLASSIFIED REPORT

ABSTRACT: In this project, we developed accurate and approximate methods for calculating cross sections of elementary reactions. These methods were applied to systems of importance for the fundamental aspects of chemical dynamics and for advanced technologies of interest to the United States Air Force. The application included calculations of three-atom exchange reactions, break-up and three-body recombination collisions and vibrational quenching by reaction. These calculations improved our understanding of such processes and permitted an assessment of some approximate methods. (Author)

DESCRIPTORS: \*quantum theory, \*Dynamics, \*Recombination reactions, \*Cross sections, Computations, Ion exchange, Collisions, Quenching, Molecular vibration, Approximation(Mathematics), Chemical lasers, High energy, Molecular rotation

IDENTIFIERS: Quantum dynamics, Chemical dynamics, Vibrational quenching, Three body recombination reactions, WUAFOSR2303B1, PE61102F

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 157 7/3 7/4

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

Micellar Systems as 'Supercages' for  
Reactions of Geminate Radical Pairs.  
Magnetic Effects.

(U)

83 10P Turro, Nicholas J. ;Weed,  
Gregory C. ;  
CONTRACT: AFOSR-81-0013  
PROJ: 2303  
TASK: B2  
MONITOR: AFOSR TR-83-0582

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American  
Chemical Society, v105 n7 p1861-1868 1983.  
Reprint: Micellar Systems as 'Supercages' for  
Reactions of Geminate Radical Pairs. Magnetic  
Effects.

DESCRIPTORS: \*Benzyl radicals, \*Photochemical  
reactions, \*Magnetic forces, Ketones, Photolysis,  
Substitution reactions, Magnetic fields, Isotopes,  
Quantum chemistry, Reprints (U)  
IDENTIFIERS: DBK(Dibenzyl Ketones), Cage effect,  
Micellar systems, WUAFOSR230382, PE61102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 138 20/5 7/4 20/6

COLORADO UNIV AT BOULDER DEPT OF CHEMISTRY

Infrared Chemiluminescence Studies of Ion-  
Molecule Reactions in a Flowing Afterglow.

(U)

DESCRIPTIVE NOTE: Final rept.,  
82 56P Bierbaum, Veronica M. ;Leone,  
Stephen R. ;Ellison, G. Barney ;  
CONTRACT: AFOSR-78-3565  
PROJ: 2303  
TASK: B1  
MONITOR: AFOSR TR-83-0558

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Mar 79, AD-  
A070 068.

ABSTRACT: A powerful new method has been developed  
for studying the dynamics of thermal energy ion-  
molecule reactions. Ion reactions are carried out  
in a well-characterized, state-of-the-art flowing  
afterglow apparatus and the excited products are  
monitored optically. Two complementary techniques  
are used: direct observation of wavelength dispersed  
infrared chemiluminescence and laser-induced  
fluorescence detection, i.e. laser excitation of the  
product molecules to bound electronic states and  
detection of the resulting visible fluorescence.  
The initial vibrational distributions have been  
determined for products formed in a wide variety of  
ion-molecule processes, including proton transfer,  
charge transfer, heavy atom transfer and associative  
detachment reactions. Information on nascent  
rotational populations and on vibrational  
deactivation of ions has also been obtained recently.  
(Author) (U)

DESCRIPTORS: \*Laser induced fluorescence, \*Infrared  
spectroscopy, \*Chemiluminescence, \*Afterglows, Ion  
ion interactions, Dynamics, Molecule molecule  
interactions, Flow, State of the Art,  
Excitation, Frequency, Visible spectra, (U)  
Detection, Observation (U)  
IDENTIFIERS: Infrared chemiluminescence, Ion  
molecule dynamics, Ion molecule reactions,  
PE61102F, WUAFOSR230381 (U)





## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 102 17/7 7/4

HUGHES RESEARCH LABS MALIBU CA

Nuclear Magnetic Resonance Gyroscope. (U)

DESCRIPTIVE NOTE: Final technical rept. 1 Sep 82-28  
Feb 83.

APR 83 64P Pepper, David M.; Wang,  
Harry T. M.;

CONTRACT: F49620-82-C-0095, F49620-80-C-0046

PROJ: 2305

TASK: B2

MONITOR: AFOSR TR-83-0574

## UNCLASSIFIED REPCRT

SUPPLEMENTARY NOTE: See also report dated Dec 82, AD-A124 925.

ABSTRACT: A study of physics of a nuclear magnetic resonance gyroscope is described. Experimental results in nuclear polarization and relaxation in <sup>3</sup>He are obtained using an optical pumping apparatus and a high resolution rf spectroscopic technique. Significant polarization in excited state neon was observed via collisional transfer from optically pumped helium in a cell filled with a mixture of helium and neon isotopes. The measured polarization was essentially independent of the isotopic composition. Moreover, the polarization to helium in the (He - Ne) binary system was not materially perturbed by the addition of the Ne (for our operation fill pressure). A sensitive rf NMR detection apparatus was fabricated and characterized. The required NMR linewidths of a dual-isotope NMRG sensor necessary to meet the required angular rate sensitivities were estimated. Although we were unable to detect the NMR ground state resonances directly, it is shown theoretically that the required rate sensitivities can be satisfied, given the anticipated output power and observed ground state polarization of helium. (U)

DESCRIPTORS: \*Gyroscopes, \*Nuclear magnetic resonance, \*Atomic structure, \*Rare gases, Collisions, Helium, Experimental data, Optical pumping, Neon, Excitation

IDENTIFIERS: Noble gases, Excited state, Collisional transfer, Neon isotopes, Helium isotopes, PE61102F, WUAFOSR230582 (U)

AD-A130 102

UNCLASSIFIED

PAGE

56

AD-A130 101

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 101 12/1 7/1

BOSTON UNIV MA CENTER FOR POLYMER STUDIES

Final Report on AFOSR-81-0042. (U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 81-30 Sep 82,  
SEP 82 64P Stanley, H. Eugene;

CONTRACT: AFOSR-81-0042

PROJ: 2301

TASK: A5

MONITOR: AFOSR TR-83-0570

## UNCLASSIFIED REPORT

ABSTRACT: A statistical-mechanical model for reversible gelation is developed. This model takes into account solvent effects, which usually are neglected in the calssical theory of gelation. The exact solution of this model is given for the limiting case in which 'loops' or intermolecular interactions may be neglected (Cayley tree). The general phase diagram is obtained and it is shown that, with a particular choice of a solvent, one can realize the interesting situation in which gelation point and consolute point coincide. This point has peculiar properties associated with the simultaneous divergence of 'connectivity' and thermal fluctuation. The recent experimental data of Tanaka and collaborators are in good qualitative agreement with the predictions of the model. (U)

DESCRIPTORS: \*Statistical analysis, \*Models, \*Gelation, \*Phase diagrams, \*Theory, Gels, Mechanical properties, Molecule molecule interactions, Loops, Solvents, Thermal properties, Variations (U)

IDENTIFIERS: Cayley tree, Statistical mechanical models, Connectivity, Intermolecular interactions, Gelation point, Thermal fluctuations, PE61102, WUAFOSR2301A5 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 100 20/7 20/3 20/5

WASHINGTON UNIV SEATTLE

Aerodynamics of E-Beam Sustained Discharges  
in Flow.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 15 Jul 82-14  
Feb 83.

APR 83 4P Christlansen, Walter H. ;

CONTRACT: AFOSR 82-0289

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR-83-0572

UNCLASSIFIED REPORT

ABSTRACT: The fundamental mechanism of the interaction of electric discharge of the glow type and the fluid mechanics normally found in electric discharge lasers has been studied. (Author)

(U)

DESCRIPTORS: \*Electron beams, \*Interactions, \*Electric discharges, \*Lasers, Glow discharges, Fluid mechanics, High pressure, High power, Arc lamps, Pulses, Performance (Engineering)

(U)

IDENTIFIERS: Experimental studies, Electric lasers, Electric discharge lasers, PEG1102F, WUAFOSR2301A1

(U)

AD-A130 100

UNCLASSIFIED

PAGE

57

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 099 7/4 11/3

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

Fundamental Studies of Underpotential Metal  
Deposition and Trace Analysis Using Solid  
Electrodes.

(U)

DESCRIPTIVE NOTE: Final rept. 15 May 78-30 Sep 82,  
82 11P Bruckenstein, Stanley ;

CONTRACT: AFOSR-78-3621

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0557

UNCLASSIFIED REPORT

ABSTRACT: One of the objectives of this research was to study and to interpret the behavior of films at solid electrodes. With a sound understanding of the characteristics of submonolayer, monolayer and thicker films and their effect on electrochemical processes, it should be possible to apply this knowledge to understanding important solution heterogeneous processes, such as corrosion and electrocatalysis (by underpotential metal deposition). A second objective was to develop new approaches to studying electrochemical reactions at solid electrodes, particularly the use of controlled hydrodynamics, in order to provide new diagnostic criteria for elucidating complex electrode processes. Another goal was to apply solid electrode structures to analytically important problems. A study of the electrocatalysis of the oxidation of formic acid by the UPD of lead, bismuth of thallium on polycrystalline platinum has shown that the third body hypothesis is a satisfactory explanation. It is necessary, however, to take into account the selective UPD of these metals and the uncatalyzed oxidation process on the various crystal planes of platinum. The lack of catalysis of the formic acid oxidation process by UPD silver and copper has been shown to be caused by the selective UPD of these metals on the platinum plane which contributes least to the uncatalyzed oxidation process.

(U)

DESCRIPTORS: \*Electrochemistry, \*Electrodeposition, \*Metal films, Tracer studies, Solid electrolytes, Electrodes, Electrocatalysts, Sorption,

Hydrodynamics, Modulation, Platinum, Gold

(U)

IDENTIFIERS: Electroanalytical chemistry, Trace ANALYSIS, Electrosorption, Platinum electrodes,

(U)

AD-A130 099

UNCLASSIFIED

PAGE

57

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 097 17/7 17/8 20/6

CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF ELECTRICAL  
ENGINEERINGOptical Pattern Recognition for Missile  
Guidance. (U)

DESCRIPTIVE NOTE: Interim rept. Sep 81-Oct 82.

NOV 82 108P Casasent, David ;

CONTRACT: AFOSR-79-0091

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0556

UNCLASSIFIED REPORT

ABSTRACT: Progress on real-time spatial light modulators, image pattern recognition and optical signal processing for missile guidance is documented. A full description of our test and evaluation of the Soviet PRIZ spatial light modulator is included. In image pattern recognition, a unified formulation of four different and new types of synthetic discriminant functions is advanced. These include synthetic discriminant functions for intra and inter-class pattern recognition and multi-class pattern recognition. In the area of image pattern recognition, we also advance new statistical synthetic discriminant function filter concepts and a new principal component synthetic discriminant function. These analyses utilize new performance measures and new image models. Conventional holographic pattern recognition research conducted under AFOSR support is also reviewed. Our new AFOSR optical signal processing research concerns optical matrix-vector processors. Initial research in this area includes fabrication of a fiber-optic microprocessor-based iterative optical processor and its use in adaptive phased array radar processing and for the calculation of eigenvalues and eigenvectors of a matrix. (Author)

DESCRIPTORS: \*Light homing, \*Pattern recognition, \*Light modulators, \*Optical target designers, \*Optical correlators, Optical processing, Hybrid systems, Infrared images, Optical analysis, Kerr cells, Spatial distribution, Performance(Engineering), Guided missiles, Two dimensional, Statistical analysis, Data processing, Models, Signal processing, Images, Optics, IDENTIFIERS: BSO(Bismuth Silicon Oxide), AD-A130 097

(U)

(U)

UNCLASSIFIED

PAGE

58

AD-A130 096

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 096 20/6 12/1 14/5 20/5  
9/2 9/4

TEXAS TECH UNIV LUBBOCK OPTICAL SYSTEMS LAB

Space-Variant Optical Systems. (U)

DESCRIPTIVE NOTE: Annual technical rept. 30 Sep 81-30

Sep 82, NOV 82 14P Walkup, John F. ;Krile,

Thomas F. ;

CONTRACT: AFOSR-79-0076

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0553

UNCLASSIFIED REPORT

ABSTRACT: Analytical and experimental investigations of 2-D space-variant optical processing techniques have been conducted. Coherent processing investigations have included (1) a continuing experimental study of the characteristics of UV-exposed photoresist phase masks for multiplex holography, and (2) both analytical and experimental studies of a technique for using wavelength-encoded tandem 1-D processors for performing 2-D processing. In the area of incoherent processing, we have completed an investigation of a tristimulus-based technique for performing complex operations using hue, saturation, and intensity parameters to represent complex numbers. (Author)

DESCRIPTORS: \*Optical processing, \*Holography, \*Complex numbers, \*Multiplexing, Intensity, Incoherence, Computer applications, Two dimensional, Pseudo random systems, Photolithography, Argon lasers, Masking, Plotters, Power spectra, Correlation techniques, Color television, Fourier transformation, Processing, One dimensional IDENTIFIERS: Hue, SVOP(Space Variant Optical Processing), Saturation, Coherent processing, Representation(Complex), Multiplex holography, White light, Complex products, Incoherent processing, Tristimulus processors, Multiplication, Subtraction, PE61102F, WUAFOSR2305B1

IAC NO.: NT-027790

IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 095 20/7 20/5 20/8

TEL-AVIV UNIV (ISRAEL) SCHOOL OF ENGINEERING

A Study of the Angular Radiation Pattern of  
Smith-Purcell Radiation.

(U)

DESCRIPTIVE NOTE: Final scientific rept. Nov 80-Oct  
81.

MAY 83 26P Gover, A.; Dvorkis, P.;

Elisha, U.;

CONTRACT: AFOSR-81-0060

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR-83-0566

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Electron beams, \*Free electrons,  
\*Lasers, \*Radiation, Measurement, Radiation  
patterns, Test and evaluation, Optical properties,  
Gratings(Spectra), Models, Focal planes,  
Frequency, Emission spectra

IDENTIFIERS: Free electron lasers, Smith Purcell  
radiation, Smith Purcell effect, Optical  
gratings, PEG1102f, WUAFOSR2301A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN3FA

AD-A130 094 7/4

OREGON UNIV EUGENE DEPT OF PHYSICS

Relativistic Calculations and Measurements of  
Energies, Auger Rates, and Lifetimes.

(U)

DESCRIPTIVE NOTE: Annual scientific rept. 1 Dec 81-30  
Nov 82.

DEC 82 18P Crasemann, B.; Chen, M. H.;

CONTRACT: AFOSR-79-0026

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0550

## UNCLASSIFIED REPORT

ABSTRACT: Substantial progress has been made with  
ab initio relativistic computations of atomic inner-  
shell energy levels and properties of few-electron  
ions. A relativistic calculation of inner-shell  
ionization by slow protons has been very successful.  
Threshold-excitation experiments with hard  
synchrotron radiation have been extended to explore  
post-collision interaction and the resonant Auger  
Raman effect which link the atomic excitation and  
deexcitation processes.

(U)

DESCRIPTORS: \*Atomic energy levels, \*Quantum

chemistry, \*Electronic states, Measurement,

Computations, X ray spectra, Auger electrons,

Transitions, Excitation, Ionization,

Synchrotrons, Spectroscopy

(U)

(U)

IDENTIFIERS: Dirac-Hartree-Slater computations,  
PEG1102F, WUAFOSR2301A4

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A130 093 20/8 7/4

CALIFORNIA UNIV SANTA BARBARA QUANTUM INST

Radiation and Laser Potential of Homo and  
Heteronuclear Rare Gas Diatomic Molecules.

(U)

DESCRIPTIVE NOTE: Final rept..

DEC 82 45P Walker, William ; Tanaka,

Yoshio ;

CONTRACT: F49620-77-C-0010, AFOSR-77-3137

PROJ: 2303

TASK: B1

MONITOR: AFOSR TR-83-0559

UNCLASSIFIED REPORT

ABSTRACT: High resolution emission spectra of the rare-gas dimers Ne<sub>2</sub>, Ar<sub>2</sub>, and Kr<sub>2</sub> were studied in the vacuum ultraviolet region 500 - 1500 Angstroms. Four band systems previously observed in all three dimers were studied in detail and classified in terms of the transition involved. Molecular constants and details of the dimer potential curves were determined.

DESCRIPTORS: Diatomic molecules, Rare gases, Emission spectra, Laser materials, Vacuum ultraviolet radiation, Visible spectra, Nuclear properties, Energy bands, Electronic states, Molecular states, Excitation, Oxides, Sulfides, Continuum mechanics

IDENTIFIERS: PEC\*102F, WUAFOSR2303B1

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A130 081 14/4 12/2 14/1

FLORIDA STATE UNIV TALLAHASSEE

Periodic Replacement with Increasing Minimal  
Repair Costs at Failure.

(U)

JUN 81 9P Proschan, Frank ; Boland,

Philip J. ;

CONTRACT: AFOSR-78-3678

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0580

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Operations Research, v30  
n6 p1183-1189 Nov-Dec 82.

Reprint: Periodic Replacement with Increasing  
Minimal Repair Costs at Failure.

DESCRIPTORS: Maintenance, Replacement, Reliability, Operations research, Cost effectiveness, Systems analysis, Failure, Repair, Time intervals, Policies, Mathematical models, Poisson density functions, Costs, Preventive maintenance, Reprints

IDENTIFIERS: PEC1102F, WUAFOSR2301A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 063 12/1 5/1

SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

Estimation under Reliability Growth Assuming Gamma Failure Models. (U)

DESCRIPTIVE NOTE: Technical rept.,

FEB 81 6P Padgett, W. J., McNichols, D. T.;

CONTRACT: F49620-79-C-0140, AFOSR-81-0166

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83 0545

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Reliability, VR-31 n2 p155-158 Jun 82.  
 Reprint: Estimation under Reliability Growth Assuming Gamma Failure Models.

DESCRIPTORS: \*Iterations, \*Mathematical models, \*Maximum likelihood estimation, \*Systems engineering, Reliability, Failure, Parametric analysis, Optimization, Reprints  
 IDENTIFIERS: PEG1102F, WUAFOSR2304A5

(U)  
(U)

AD-A130 063

UNCLASSIFIED

PAGE

61

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 062 14/2 20/1 17/1

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

Quantitative Evaluation of Real-Time Synthetic Aperture Acoustic Images. (U)

DESCRIPTIVE NOTE: Interim technical rept.,

82 12P Peterson, D. K.; Baer, R.; Liang, K.; Bennett, S. D.; Khuri-Yakub, B. T.;

REPT. NO. GL-3361

CONTRACT: F49620-79-C-0217, W-7405-eng-82

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0554

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Review of Progress in Quantitative Nondestructive Evaluation, V1 p767-776 1982.

ABSTRACT: Recent developments of two synthetic aperture acoustic imaging systems are described. The first, operating at 3.3 MHz in real time, was used to obtain images of cracks which can be interpreted to give quantitative estimates of crack dimension. A thorough understanding of the performance of this imaging system was developed which makes accurate predictions of such parameters as sidelobe levels. The second imaging systems (unlike the first) operates with a single scanned transducer rather than an array. Realtime imaging is not then possible, but operation at very high frequencies (50 MHz) has been demonstrated with the associated improvement in resolution. An analysis of the reconstruction process is given with examples of images obtained from experimental data. (Author-PL)

(U)

DESCRIPTORS: \*Nondestructive testing, \*Ultrasonics, \*Acoustic detection, \*Synthetic aperture sonar, Images, High frequency, Transducers, Very high frequency, Real time, Reprints

(U)

IDENTIFIERS: Acoustic images, Ultrasonic images, Sonar images, Slot defects, Rayleigh waves, PEG1102F, WUAFOSR2306A2

(U)

IAC NO.: PL-044911

IAC DOCUMENT TYPE: PLASTIC - MICROFICHE--

IAC SUBJECT TERMS: P--(U)Composites, NDE, NDT.

AD-A130 062

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 057 4/1

CALIFORNIA UNIV LOS ANGELES

An Experimental Study of Atmosphere-Ionosphere Coupling Using Magnetometers. (U)

DESCRIPTIVE NOTE: Final technical rept. 15 Feb-15 Nov 82.

NOV 82 13P Luhmann, Janet G.; Coleman, Paul J., Jr.

CONTRACT: AFOSR-82-0193, ARPA Order 4513

PROJ: 2309

TASK: A1

MONITOR: AFOSR TR-83-0571

## UNCLASSIFIED REPORT

ABSTRACT: On three occasions, portable magnetometer experiments with automated data systems designed especially for unsupervised operation were carried within a 50 km radius of underground nuclear tests at the Nevada Test Site. The purpose of these experiments was to determine whether the disturbance of the atmosphere by the ground movement related to the test created a measurable perturbation current in the ionosphere. Preliminary analyses of the results suggest that the natural ULF magnetic background is too noisy to allow the certain identification of a test related signal by visual inspection of chart records. However, more sophisticated computerized methods can be applied to identify small differences in magnetic fields measured at several sites. The negative result reported here is thus qualified to the extent that we have not made use of these more sensitive data analysis tools.

DESCRIPTORS: \*Ground motion, \*Ionosphere, Troposphere, Explosions, Microbarometric waves, Coupling (Interaction), Ionosphere, Perturbations, Electric current, Magnetic fields, Detection, Geomagnetism, Background  
 IDENTIFIERS: PE61102F, WUAFOSR2309A1 (U)

AD A130 057

UNCLASSIFIED

PAGE

62

AD-A130 055

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 055 11/6 7/4

DELAWARE UNIV NEWARK DEPT OF PHYSICS

Resistivity Anomalies and Phase Transitions in Alkali Metal Graphite Intercalation Compounds. (U)

77 7P Omm, David G.; Foley, G.

M. T.; Fischer, J. E.;

CONTRACT: AFOSR-77-3393, NSF-DMR76-00678

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0586

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Materials Science and Engineering, V31 p271-275 1977.  
 Reprint: Resistivity Anomalies and Phase Transitions in Alkali Metal Graphite Intercalation Compounds.

DESCRIPTORS: \*Pyrolytic graphite, \*Alkali metals, Resistance, Anomalies, Temperature, Transitions, Potassium, Rubidium, Cesium, Reprints  
 IDENTIFIERS: \*Graphite intercalation compounds, PE61102F, WUAFOSR2306C3 (U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 054 20/8 20/10

ROCHESTER UNIV NY DEPT OF CHEMISTRY

Semiclassical Theory of Collisional Ionization.

MAY 82 9P Lam, Kai-Shue ; George,  
 Thomas F. ; Bhattacharyya, Dilip K. ;  
 CONTRACT: AFOSR-82-0046, NSF-CHE80-22874  
 PROJ: 2303  
 TASK: A2  
 MONITOR: AFOSR TR-83-0581

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review A, v27  
 n3 p1353-1359 Mar 83.  
 Reprint: Semiclassical Theory of Collisional Ionization.

DESCRIPTORS: \*Ionization, \*Particle collisions,  
 \*Quantum theory, Dynamics, Nuclear reactions,  
 Adiabatic conditions, Energy levels, Electron  
 energy, Equations of motion, Reprints  
 IDENTIFIERS: PE61102F, WUAFOSR2303A2

(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 053 7/4 20/10

OREGON UNIV EUGENE DEPT OF PHYSICS

K-MM Auger-Intensity Peaks from Double-Hole Energy-Level Crossings.

NOV 82 5P Chen, Mau Hsiung ; Crasemann,  
 Bernd ; Mark, Hans ;  
 CONTRACT: F49620-83-K-0020  
 PROJ: 2301  
 TASK: A4  
 MONITOR: AFOSR TR-83-0579

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Physical Review A, v27  
 n2 p1213-1216 Feb 83.  
 Reprint: K-MM Auger-Intensity Peaks from Double-Hole Energy-Level Crossings.

DESCRIPTORS: \*Auger electron spectroscopy, \*Energy levels, \*Quantum theory, Auger electrons, Holes(Electron Deficiencies), Atoms, Coupling(Interaction), Peak values, Intensity, Reprints  
 IDENTIFIERS: Divac-Hartree-Slater calculations, Auger processes, Atomic inner shell transitions, PE61102F, WUAFOSR2301A4

(U)

(U)

AD-A130 054

UNCLASSIFIED

PAGE

63

AD-A130 053

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A130 048

9/2

KESTREL INST PALO ALTO CA

Research on Synthesis of Concurrent Computing Systems.

(U)

DESCRIPTIVE NOTE: Final technical rept. 2 Oct 81-30

SEP 82

SEP 82 15P King, Richard M.; Brown,

Thomas C.; Green, Cordell;

CONTRACT: F49620-82 C-0007

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83 0562

## UNCLASSIFIED REPORT

**ABSTRACT:** The object of our research is the codification of programming knowledge for the synthesis of concurrent programs. This final report presents the derivation of two concurrent algorithms: dynamic programming (for the class of problems that run in polynomial time on sequential machines) and binary multiplication (with derived concurrent algorithms run in linear time). The concurrent algorithms are significant and complex algorithms, though they are not new and already have been reported in the literature. The synthesis knowledge that the derivations is embodied in seven synthesis rules; preliminary versions of which are presented in this report. The rules will probably generalize to other classes of algorithms but we have not explored that issue yet. We have also discovered a pair of techniques called virtualization and aggregation. This pair of techniques (plus the other seven rules) is shown to be powerful enough to synthesize King's systolic array architecture (Kung 76) from a specification of matrix multiplication.

(U)

**DESCRIPTORS:** \*Computer programming, \*Computer programs, Coding, Algorithms, Dynamic programming, Multiplication, Matrices (Mathematics), Parallel processing, Linearity, Time, Architecture, Synthesis, Transformations, Polynomials, Computer communications, Input output processing, Arrays, Optimization, Connectors, Reduction, Computers

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304A2

(U)

AD-A130 048

UNCLASSIFIED

PAGE

64

AD-A130 044

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 044

20/6

20/5

HUGHES RESEARCH LABS MALIBU CA

Phase Conjugate Optical Resonator.

(U)

DESCRIPTIVE NOTE: Interim technical rept. 15 Jul 81-14

Mar 82.

APR 82

APR 82 26P Jain, R. K.;

CONTRACT: F49620-80-C-0041

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR-83-0543

## UNCLASSIFIED REPORT

**ABSTRACT:** During this reporting period, a paper on the study of longitudinal modes and the aberration correction potential of a PCR based on a continuous wave dye laser with a sodium phase conjugate mirror was published in Optics Letters as well as a paper on multi-resonant behavior in nearly degenerate four-wave mixing in sodium. In addition, we report the measurement of spatial and temporal properties of a PCR based on the photorefractive crystal BaTiO<sub>3</sub>, and pumped with mW power levels from a He Ne or a Kr(+) ion laser. In the absence of an intracavity aperture, the output beam is observed to be elongated in the plane of the crystal axis, via preferential self-defocussing of the beam due to the large anisotropy of the photorefractive effect in BaTiO<sub>3</sub>. The resonator buildup time constants are found to be significantly larger than the time constants of the photorefractive response, particularly when the coherence length of the pump lasers are much smaller than the roundtrip distance in the phase conjugate resonator. (Author)

(U)

**DESCRIPTORS:** \*Resonators, Mirrors, \*Corrections, \*Optical properties, Reflectivity, Distortion, Continuous wave lasers, Krypton, Dye lasers, Laser pumping, Helium neon lasers, Coherence, Constants, Sodium, Power levels, Gain, Metal vapors, Pressure, Crystals, Length, Barium titanates, Axes, Output, Time, Stark effect, Anisotropy, Dyes

(U)

**IDENTIFIERS:** Optical resonators, PCR (Phase Conjugate Resonators), Phase conjugation, Photorefractive crystals, Four wave mixing, Time reserved wavefronts, Longitudinal modes,

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 043 22/2 4/1 20/3

YORK UNIV DOWNSVIEW (ONTARIO) CENTRE FOR RESEARCH IN  
EXPERIMENTAL SPACE SCIENCENumerical Simulation of Spacecraft Charging  
Phenomena at High Altitude.

DESCRIPTIVE NOTE: Final rept. 1 Mar 76-31 Aug 81.

AUG 82 57P Laframboise, J. G. ;  
Kamitsuma, M. ; Prokopenko, S. M. L. ; Chang,  
Jen-Shih ; Godard, R. ;

CONTRACT: AFOSR-76-2962

PROJ: 2311

TASK: A1

MONITOR: AFOSR TR-83-0549

## UNCLASSIFIED REPORT

ABSTRACT: This report describes work done under grant AFOSR-76-2962. This work has included the development of computer programs for simulating spacecraft charging at three levels of complexity: LOCHG, a relatively simple local-charging calculation; CYLVIA, a two-dimensional simulation program for treating cylindrical spacecraft cross-sections, and XYCIC, a simulation program for the treatment of a larger variety of two-dimensional geometries. This work has also included studies of two physical phenomena which are fundamental to an improved understanding of spacecraft charging: the threshold temperature effect and the barrier effect. Also included is a derivation of two results which appear likely to be of use in future simulation studies: an analytic expression for photoelectron currents on surfaces with variable illumination in electric fields, and a perturbation technique for calculating space-charge density and flux along particle orbits. (Author)

DESCRIPTORS: \*Space charge, \*Spacecraft components, Space systems, High altitude, Ion density, Computerized simulation, Numerical analysis, Photoelectric emission  
IDENTIFIERS: \*Spacecraft charging, PE61102F, WUAFOSR2311A1

(U)

(U)

(U)

AD-A130 043

## UNCLASSIFIED

PAGE

65

AD-A130 041

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 041 11/6 20/11

LEHIGH UNIV BETHLEHEM PA INST OF FRACTURE AND SOLID  
MECHANICSMechanisms of Corrosion Fatigue in High  
Strength I/M (Ingot Metallurgy) and P/M  
(Powder Metallurgy) Aluminum Alloys.

DESCRIPTIVE NOTE: Technical rept.,

FEB 83 70P Wei, R. P. ; Pao, P. S. ;

REPT. NO. IFSM-83-114, TR-2

CONTRACT: F49620-81-K-0004

PROJ: 2306

TASK: A1

MONITOR: AFOSR TR-83-0560

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with McDonnell Douglas Research Labs.

ABSTRACT: High strength aluminum alloys are employed extensively in the primary structure of current and projected Air Force and civilian aircraft. The service lives and reliability of these aircrafts depend to a great extent on the corrosion fatigue resistance of the structure alloys. Significant efforts are underway to develop powder metallurgy (P/M) alloys that would provide improved corrosion fatigue resistance along with improvements in other mechanical properties. The objective of this study is to understand the chemical and metallurgical aspects of environmental assisted fatigue crack growth (or corrosion fatigue) that can serve (1) as a basis for guiding the development of new and improved alloys, and (2) as a basis for developing rational design procedures for service life predictions. A coordinated fracture mechanics, surface chemistry and materials science approach is used. The research is being performed by Lehigh University with technical support by McDonnell Douglas Research Laboratories. (Author)

DESCRIPTORS: \*Aluminum alloys, \*Corrosion, \*Fatigue(Mechanics), High strength alloys, Fracture(Mechanics), Cracking(Fracturing), Strength(Mechanics), Powder metallurgy, Chemical attack(Degradation), Microstructure, Resistance, Structural analysis  
IDENTIFIERS: PE61102F, WUAFOSR2306A1

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 040 20/5 20/10 20/8

FLORIDA UNIV GAINESVILLE QUANTUM THEORY PROJECT

Molecular Interactions with Many-Body Methods.

(U)

DESCRIPTIVE NOTE: Annual technical rept.,

DEC 82 46P Bartlett, Rodney J. ;

CONTRACT: AFOSR-82-0026

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0551

## UNCLASSIFIED REPORT

ABSTRACT: Modern military technology has become highly dependent on a detailed knowledge of atom-molecule and molecule-molecule interactions. This type of information is required in diverse defense applications including chemical laser development, in the detection and modeling of plumes, and in the decomposition of energetic materials. The description of forces governing molecular reactions is provided by potential energy surfaces. These surfaces are the crucial first step in dynamics calculations that provide required information about state-to-state cross-sections and rate constants. Since potential energy surfaces are not generally available from experiment, the most reliable approach to their determination lies in the development and application of predictive ab initio quantum mechanical methods. The following annual report describes our research on the development of many-body perturbation theory (MBPT) and related infinite-order coupled-cluster (CC) methods for potential energy surfaces.

DESCRIPTORS: \*Chemical lasers, \*Quantum theory, \*N body problem, \*Molecule molecule interactions, Reaction kinetics, Detection, Plumes, Perturbation theory, Clustering, Coupling(Interaction), Atomic structure, Decomposition, Models, Defense systems, Military applications, Molecular energy levels, Mechanics, Rates, Constants, Energetic properties

IDENTIFIERS: Quantum mechanics, Quantum mechanic methods, Molecular reactions, Molecular chemistry, Rate constants, PE61102F, WUAFOSR2301A4

(U)

(U)

AD-A130 040

## UNCLASSIFIED

PAGE

66

AD-A130 037

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 037 14/4 15/5 5/1

CITY COLL NEW YORK DEPT OF MATHEMATICS

On the Reliability of Repairable Systems.

(U)

DESCRIPTIVE NOTE: Technical rept.,

OCT 82 19P Brown, Mark ;

REPT. NO. CUNY-MB1, TR-82-01-AFOSR

CONTRACT: AFOSR-82-0024

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0547

## UNCLASSIFIED REPORT

ABSTRACT: The problem of time to first failure for repairable coherent systems of independent exponential components is discussed. Several inequalities are derived and related to previous work of the author and of Keilson to obtain approximations with error bounds for the distribution of the time to first failure. (Author)

DESCRIPTORS: \*Reliability, Failure, Repair, Errors, Mathematical models, Systems approach, Inequalities, Stochastic control

IDENTIFIERS: Fault free analysis, Time to first failure, PE61102F, WUAFOSR2304A5

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 036 20/5 20/2 20/12 12/1

CORNELL UNIV ITHACA NY

Exciton-Laser Amplifier.

(U)

DESCRIPTIVE NOTE: Interim technical rept.,

DEC 82 9P Liboff, Richard L.; Liu, K.

C.;

REPT. NO. R4-82

CONTRACT: AFOSR-78-3574

PROJ: 2301

TASK: A3

MONITOR: AFOSR TR-83-0544

UNCLASSIFIED REPORT

ABSTRACT: A laser-amplifying device is described which is based on the stimulated decay of excitons in a pure crystal. An estimate is made of the gain of the device. At a typical frequency the gain is found to be appreciably large thus suggesting practical application of the laser amplifier.

(U)

DESCRIPTORS: \*Excitons, \*Laser amplifiers,

\*Ultraviolet lasers, \*Single crystals,

\*Statistics, \*Semiconductors, Zinc sulfides,

Optical pumping, Infrared lasers, Flash lamps,

Zinc oxides, Stimulation(General), Zinc

selenides, Purity, Gain, Gallium arsenides,

Cadmium sulfides, Indium antimonides, Amplifiers,

Photons, Crystals, Silicon, Decay, Germanium

IDENTIFIERS: Bose commutation relation, Cyan

Hued lasers, Wannier state functions, Energy

gaps, Lorentzian lineshape factor, Binding energy,

Exciton laser amplifiers, Nonbose excitons,

PE61102F, WUAFOSR2301A3

(U)

AD-A130 036

UNCLASSIFIED

PAGE

67

AD-A130 035

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 035 20/10

CORNELL UNIV ITHACA NY

Induced Decay of Positronium and Grasers.

(U)

DESCRIPTIVE NOTE: Technical rept.,

APR 83 16P Heffernan, Daniel M.; Liboff,

Richard L.;

REPT. NO. IJTP-1-83

CONTRACT: AFOSR-78-3574

PROJ: 2301

TASK: A3

MONITOR: AFOSR TR-83-0573

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in International Jnl. of Theoretical Physics, v22 n2 p193-206 1983. Reprint: Induced Decay of Positronium and Grasers.

(U)

DESCRIPTORS: \*Photons, \*Decay, \*Positronium,

Blackbody radiation, Cross sections, Reprints

IDENTIFIERS: Graser, Induced decay, PE61102F,

WUAFOSR2301A3

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 034 20/6 9/2 17/8 12/1

LOUISIANA STATE UNIV BATON ROUGE DEPT OF ELECTRICAL  
ENGINEERING

A Study of Texture Analysis Algorithms. (U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 79-28 Feb 81,  
APR 81 79P Harlow, Charles A. ;Connors,  
Richard W. ;

CONTRACT: F49620-79-C-0042

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0563

## UNCLASSIFIED REPORT

ABSTRACT: This research has focused upon developing improved texture analysis algorithms. Work performed during the second year of the grant has shown that the Spatial Gray Level Dependence (SGLDM) texture analysis algorithm is a superior algorithm under fairly weak assumptions. For this reason our subsequent work has continued the development of the SGLDM method. Tiling theory has been combined with the SGLDM analysis procedure to create a structural (SSA) analyzer for texture patterns. Recent work has focused upon determining measures derived from the SGLDM and combined matrices that characterize texture patterns. It has been shown that the commonly used measures are inadequate. A texture generation procedure has been developed and this has been used to generate new measures based upon the perceptual concepts of uniformity and proximity. These measures offer promise of developing measures related to perceptual features. Experiments were also conducted which shows that the SGLDM algorithm can discriminate known counterexamples to the Julesz conjecture. Thus the robustness of the SGLDM has been further established over this theoretically troublesome class of textures. (Author)

DESCRIPTORS: Image processing, Computer graphics, Optical images, Texture, Algorithms, Visual perception, Spatial distribution, Gray scale, Pattern recognition, Target detection, Rank order statistics

IDENTIFIERS: SGLD/Spatial Gray Level Dependence, Scene analysis, Texture analysis, PE51102F, WUAFOSR2304A2

AD-A130 034

UNCLASSIFIED

PAGE

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 033 17/1 14/2

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

Focused Acoustic Beams for Accurate Phase Measurements, (U)

82 15P Bennett, S. D. ;Husson, D. ;

Kino, G. S. ;

REPT. NO. GL-3275

CONTRACT: F49620-79-C-0217

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0555

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Acoustical Imaging, VII p583-595 1982.

ABSTRACT: Nondestructive evaluation tasks which the ability to determine the state of stress in a component would be invaluable are described. The use of ultrasonic probes offers a real possibility of measuring stress below the immediate surface region. Acoustic measurements based on the acoustic elastic effect successfully determined the cross sectional variation of stress for specimens in plane strain. Until now there has been little success in measuring stress distribution through the thickness of a specimen. A theory is outlined and an initial experiment was conducted with a new technique which is capable of determining the distribution of stress in a solid body in three dimensions. (Author, modified PL)

DESCRIPTORS: Acoustic beams, Nondestructive testing, Beams(Radiation), Measurement, Plane waves, Probes, Stresses, Surfaces, Distribution, Thickness, Electron scattering, Reprints

IDENTIFIERS: Ultrasonic waves, Ultrasonic probes, Phase measurements, State of stress, Test specimens, PE51102F, WUAFOSR2306A2

IAC NO.: NT-027791 PL-044912

IAC DOCUMENT TYPE: NTIAC -MICROFICHE-- PLASTIC - MICROFICHE--

IAC SUBJECT TERMS: N--(U)ACOUSTIC WAVES, ULTRASONICS, PROBES, PHASE, MEASUREMENT, FOCUSING, STRESSES, THREE DIMENSIONAL, THEORY, REFERENCE BEAMS, PHASE SHIFT, FOCUSED TRANSDUCERS, ACOUSTOELASTICITY; P--(U)NDE, NDT, Acoustic emission, Ultrasonics, Phase velocity,

AD-A130 033

UNCLASSIFIED

68

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A130 018 20/12 20/6 12/1

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

Third-Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures.

(U)

SEP 82 4P Yuen, S. Y. ;  
 CONTRACT: F49620-80-C-0008  
 PROJ: 2306  
 TASK: C2  
 MONITOR: AFOSR TR-83-0583

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Physics Letters, v42 n4 p331-333, 15 Feb 83.  
 Reprint: Third-Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures.

DESCRIPTORS: \*Semiconductors, \*Nonlinear systems, \*Refractive index, Electrons, Heterogeneity, Aluminum gallium arsenide, Mercury compounds, Cadmium compounds, Tellurides, Mass, Reprints  
 IDENTIFIERS: Nonlinear optics, Effective mass, Refractive indices(Nonlinear), Gallium indium arsenide phosphide, Third order nonlinearities, Heterostructures(Semiconductor), Relaxation time, Optical fields, PE61102F,  
 WUAFOSR2306C2

(U)

(U)

AD-A130 018

UNCLASSIFIED

PAGE

69

AD-A129 995

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 995 20/12 20/5

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

Non-Linear Optical Interactions in Semiconductors.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Apr 79-3 Mar 83,  
 APR 83 15P Salour, M. M. ;  
 CONTRACT: F49620-79-C-0071  
 MONITOR: AFOSR TR-83-0584

## UNCLASSIFIED REPORT

ABSTRACT: The first tunable CW laser action in both mode-locked and unmode-locked (in both straight and ring cavity) configurations has been demonstrated. The gain media were plate ets of CdS, CdSe, InGaAsP, and HgCdTe.

Pulse as short as 2.8 Psec and continuous tunability between .5 micrometers and 2.5 micrometers has been achieved. Picosecond spectroscopy of bound excitons, using a synchronously operating streak camera; and picosecond photoelectric emission from a Zirconium metal surface have been studied. The first experimental technique for compensating the pulse broadening in single-mode optical fibers using the slow anomalous pulse propagation in the exciton-polariton resonance in a Direct-gap semiconductor has been demonstrated. (Author)

(U)

DESCRIPTORS: \*Semiconductors, \*Continuous wave lasers, \*Tunable lasers, \*Spectroscopy, Gallium arsenides, Pulses, Photoelectric emission, Nonlinear systems, Optical properties, Fiber optics, Gain, Zirconium, Surfaces, Excitons, Cadmium tellurides, Cavities

(U)

IDENTIFIERS: Picosecond spectroscopy, Exciton, Polariton, Continuous tunability lasers, PE61102F, WUAFOSR2306C2

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 994 12/1

ENVIRONMENTAL RESEARCH INST OF MICHIGAN ANN ARBOR

Uniqueness of Phase Retrieval for Functions  
with Sufficiently Disconnected Support.

(U)

R. : AUG 82 5P Crimmins, T. R. ; Fienup, J.

REPT. NO. 161900-2-U

CONTRACT: F49620-82-K-0018

MONITOR: AFOSR TR-83-0568

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Optical  
Society of America, v73 n2 p218-221 Feb 83.  
Reprint: Uniqueness of Phase Retrieval for  
Functions with Sufficiently Disconnected Support.DESCRIPTORS: \*Functions(Mathematics), \*Fourier  
transformation, Autocorrelation, Integrals, One  
dimensional, Complex numbers, Value, Theorems,  
laplace transformation, Cross correlation,  
ReprintsIDENTIFIERS: Phase retrieval, Image  
reconstruction, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 993 20/6 20/12 20/9 20/5

MASSACHUSETTS INST OF TECH CAMBRIDGE RES. ARCH LAB OF  
ELECTRONICS

Infrared Nonlinear Optics.

(U)

81 3P Wolff, Peter A. ; Aggarwal,  
Roshan L. ; Brown, F. ; Jagannath, Chiravunni ;  
Ram-Mohan, L. R. ;

CONTRACT: F49620-80-C-0008

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0587

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in RLE Progress Report  
Number 124, Research Lab. of Electronics.  
M.I.T., Cambridge, MA. Section 9 p45-46 Jan  
82.

Reprint: Infrared Nonlinear optics.

DESCRIPTORS: \*Optics, \*Semiconductors, \*Infrared  
radiation, Plasma generators, Carbon dioxide lasers,  
Gallium arsenides, Indium antimonides, Mercury,  
Cadmium tellurides, Infrared lasers, Reprints

(U)

IDENTIFIERS: Nonlinear optics, Gallium  
antimonides, Four wave mixing, PE61102F,  
WUAFOSR2306C3

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 832 20/9 7/4

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

Theoretical Studies of Kinetic Mechanisms of  
Negative Ion Formation in Plasmas. (U)DESCRIPTIVE NOTE: Final technical rept. 15 Jan 81-15  
Jan 83.

MAR 83 30P Michels, H. Harvey ; Hobbs,

Robert H. ;

REPT. NO. UTRC/R83-925499

CONTRACT: F49620-81-C-0022

PRJ: 2301

TASK: A7

MONITOR: AFOSR TR-83-0576

## UNCLASSIFIED REPORT

ABSTRACT: This technical program constitutes a theoretical research investigation of the kinetic mechanisms of negative ion formation in plasmas. This study was directed toward elucidating the mechanisms of the most important volume-dependent reactions that occur in hydrogen-ion, H-(D-), source devices, primarily of the Belchenko-Dimov-Dudnikov (BDD) type. The primary goal of this research program was to identify the most important reactions leading to H-(D-) production or destruction and to estimate these reaction rates as a function of system parameters such as density, composition and temperature. A further goal was to explore new chemical sources for the production of light mass negative atomic ions. The results of this program furnish data and provide direction for more detailed investigations into the kinetics of both gas phase and gas-surface reaction rates of importance in ion source devices and provide input for reliable modeling of such systems. This investigation was carried out using quantum mechanical methods, both ab initio and density functional approaches were employed in these studies (U)

DESCRIPTORS: \*Plasmas(Physics), \*Anions, \*Kinetics, Potential energy, Configurations, Interactions, Gases, Quantum theory, Computations, Experimental data

IDENTIFIERS: Negative ions, PE61102F, WUAFOSR2301A7

(U)

(U)

AD-A129 832

UNCLASSIFIED

PAGE

71

AD-A129 761

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 761 12/1 9/3 17/2

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA DEPT  
OF SYSTEMS ENGINEERINGRobust Signal Processing for Communication  
Systems, (U)

82

10P

Vincent ; Kassam, Saleem A. ; Poor, H.

CONTRACT: AFOSR-82-0022, DAAG29-81-K-0062

PROJ: 2304

TASK: A5

MONITOR: AFOSR, ARO TR-83-0508, 17761.9-EL

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Communications Magazine, v21 n1 p20-28 Jan 83. Sponsored in part by N00014-80-K-0945 and N00014-81-K-0014.  
Reprint: Robust Signal Processing for Communication Systems.

DESCRIPTORS: \*Mathematical models, \*Signal processing, \*Communication and radio systems, Game theory, Matched filters, Estimates, Equalization, Reprints

IDENTIFIERS: Robust procedures, Wiener filters, PE61102F, WUAFOSR2304A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 759 7/3 7/4

DELAWARE UNIV NEWARK DEPT OF PHYSICS

Superconductivity of the Graphite Intercalation  
Compounds KHgC<sub>8</sub> and RbHgC<sub>8</sub>: Evidence  
from Specific Heat,

NOV 80 7P Alexander, M. Grayson ;  
Goshorn, David P. ; Guerard, Daniel ; Lagrange,  
Philippe ; Makrini, Mohamed El ;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0525

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Solid State

Communications, v38 p103-107 1981.

Reprint: Superconductivity of the Graphite

Intercalation Compounds KHgC<sub>8</sub> and RbHgC<sub>8</sub>:

Evidence from Specific Heat.

DESCRIPTORS: \*Graphite, \*Mercury compounds,  
\*Superconductivity, Specific heat, Temperature,  
Measurement, Electron density, Phonons,  
Coupling (Interaction), Reprints

IDENTIFIERS: GIC (Graphite Intercalation  
Compounds), Mercurographitides, PEG102F,  
WUAFOSR2306C3

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 746 20/6 12/1 9/1 20/1

BATTELLE COLUMBUS LABS OH

Optical Waveguide Spatial Filters.

DESCRIPTIVE NOTE: Annual technical rept.,  
MAY 83 38P Kenan, R. L. ; Verber, C.

M. ;

CONTRACT: W49620-79-C-0044

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0530

UNCLASSIFIED REPORT

ABSTRACT: Progress in the development of an  
Integrated Optical Circuit (IOC) to perform  
(analog) matrix-vector multiplication (16 squared x  
16) is presented. The IOC utilizes the enagement  
architecture. (Author)

(U)

DESCRIPTORS: \*Spatial filtering, \*Optical  
waveguides, \*Surface acoustic wave devices \*Light  
modulators, \*Optical correlators, Parallel  
processing, Signal processing, Optical circuits,  
Fourier transformation, Programmed instruction,  
Integrated circuits, Electrooptics

(U)

IDENTIFIERS: Numerical optical computing, /nalog  
multiplication, Matrix multiplication,  
IOC (Integrated Optical Circuits), Vector  
multiplication, Grating arrays, Integrated optics,  
PEG102F, WUAFOSR2305B1

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 703 6/1

CALIFORNIA UNIV SAN FRANCISCO

ADP-ribosylation of Nonhistone Chromatin  
Proteins in Vivo and of Actin in Vitro and  
Effects of Normal and Abnormal Growth  
Conditions and Organ-Specific Hormonal  
Influences.

(U)

DESCRIPTIVE NOTE: Technical rept.,

81 17P Kun, E. ; Romaschin, A. D. ;  
Blaisdell, R. J. ; Jackowski, G. ;

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0534

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Metabolic Interconversion  
of Enzymes 1980, p280-293.  
Reprint: ADP-ribosylation of Nonhistone Chromatin  
Proteins in Vivo and of Actin in Vitro and Effects  
of Normal and Abnormal Growth Conditions and  
Organ-Specific Hormonal Influences.

DESCRIPTORS: \*Chromatin, \*Proteins, \*Adenosine,  
Polymers, In vivo analysis, In vitro analysis,  
Hormones, Deoxyribonucleic acids, Ribose,  
Nuclei, Reprints

IDENTIFIERS: PE61102F, WUAFOSR2312A5

(U)

(U)

AD-A129 703

UNCLASSIFIED

PAGE

73

AD-A129 686

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 686 6/1

CALIFORNIA UNIV SAN FRANCISCO

Age Dependent Selective Effects of  
Hydrocortisone and Aldosterone on the  
Polyadenosine Diphosphoribose Metabolism of  
Isolated Cardiacocyte Nuclei,

(U)

NOV 81 10P Jackowski, George ; Romaschin,

Alexander D. ; Kun, Ernest ;

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0539

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Biochemistry  
International, v4 n1 p17-24 Jan 82.  
Reprint: Age Dependent Selective Effects of  
Hydrocortisone and Aldosterone on the Polyadenosine  
Diphosphoribose Metabolism of Isolated Cardiacocyte  
Nuclei.

DESCRIPTORS: \*Aldosterone, \*Adenosine, \*Ribose,  
Polymers, Organic phosphorus compounds,  
Metabolism, Cells(Biology), Synthesis, Rats,  
Nuclei, Reprints

(U)

(U)

IDENTIFIERS: Polyadenosine-diphosphoribose,  
\*Hydrocortisone, PE61102F, WUAFOSR2312A5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 685 6/19 6/16

WISCONSIN UNIV-MADISON

Neuroendocrine and Metabolic Factors in  
Pulmonary Circulatory Control,

(U)

82 10P WILL, James A. ;

CONTRACT: AFOSR-78-3497

PROJ: 2312

TASK: A1

MONITOR: AFOSR TR 83-0518

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Advances in Shock  
Research, v8 p13-20 1982.Reprints: Neuroendocrine and Metabolic Factors in  
Pulmonary Circulatory Control.DESCRIPTORS: \*Endocrine glands, Neurophysiology,  
Lung, Blood circulation, Control, Oxygen,  
Hypoxia, Hyperoxia, Reprints

IDENTIFIERS: PE61102F, WUAFOSR2312A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 682 20/6 14/5 5/2

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF ELECTRICAL  
ENGINEERINGWhite-Light Optical Information Processing  
and Holography.

(U)

DESCRIPTIVE NOTE: Annual rept. 15 Feb 82-14 Feb 83,  
MAY 83 53P Yu, Francis T. S. ;

CONTRACT: AFOSR-81-0148

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0502

UNCLASSIFIED REPORT

ABSTRACT: During the second year (FY '82) a great deal of progress has been made on the white-light optical information processing and holography research program. In this period, we have evaluated the coherence requirement, source encoding, and signal sampling concept for the proposed white-light optical signal processor. We have shown that the spatial coherence requirement is governed by source distribution while the temporal coherence requirement is controlled by spatial frequency bandwidth of the input signal and the grating sampling frequency. In order to alleviate the basic constraints of a white-light source, we have developed a source encoding and signal sampling concept, so that the information can be processed in complex amplitude for the entire spectral band of the white-light source. We have also evaluated an apparent transfer function for the proposed white-light signal processor. We have shown that the MTF is dependent upon the degree of spatial and temporal coherence. The derived apparent transfer function is very general, which can be applied to any partially coherent optical processor. Since the proposed white-light signal processor is very suitable for color image processing, we have, in this period, also demonstrated several color image processing capabilities. Among those are broadband color image deblurring and color image subtraction. From those results, we have seen high quality deblurred color images and subtracted color images can be performed by the proposed white-light optical processor. We have also in this period evaluated the primary aberrations and the bandwidth

(U)

(U)

DESCRIPTORS: \*Optical processing, \*Image processi  
AD-A129 682

AD-A129 685

UNCLASSIFIED

PAGE

74

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 677 7/3 7/4

DELAWARE UNIV NEWARK DEPT OF PHYSICS

Thermal and Physical Properties of Graphite  
Intercalation Compounds.

(U)

DESCRIPTIVE NOTE: Final rept. 15 Jul 77-30 Jun 82,  
82 12P Onn, David G. ;

CONTRACT: AFOSR-77-3393

PROJ: 2306

TASK: C3

MONITOR: AFOSR TR-83-0529

## UNCLASSIFIED REPORT

ABSTRACT: Five major contributions to research in graphite intercalation compounds (GIC's) have been made. They are (1) the discovery of superconductivity in the mercurographitides (KHC8 and RbHgC8) which was first seen in low temperature specific heat (Cp) studies, (2) that low-energy phonon states appear to play a role in suppressing Tc for superconducting GIC's and may suppress superconductivity altogether, (3) the re-awakening of interest in magnetic graphite intercalation compounds arising in part from our specific heat studies which suggest the possibility of a magnetic spin-glass state in FeCl3 and NiCl2 compounds, and (4) the confirmation that a low density of electronic states is common to a wide class of acceptor intercalation compounds. In addition, (5) it permitted completion of research that showed for the first time the universality of 'twin' phase transitions in donor alkali metal GIC's below stage 1. Of the above, (1), (3) and (5) have led to a wealth of further research by other groups in recent years and have had lasting influence in this research area. Research performed under this grant was devoted primarily to the determination of the low temperature physical properties of a wide range of graphite intercalation compounds (GIC's) and the interpretation of these properties. In addition some new GIC's were synthesized and transport studies initiated elsewhere were completed.

(U)

DESCRIPTORS: \*Graphite, \*Mercury compounds, \*Physical properties, \*Thermal properties, Superconductivity, Specific heat, Magnetoresistance, Electrical resistance, Low

IDENTIFIERS: GIC(Graphite Intercalation

AD-A129 677

## UNCLASSIFIED

PAGE

75

AD-A129 675

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 675 6/1

CALIFORNIA UNIV SAN FRANCISCO

Regulator of Chromatin Function by  
Polyadenosine Diphosphoribosylation,

(U)

JUN 82 15P Kun, Ernest ; Minaga, Takeyoshi  
; Kirsten, Eva ; Jackowski, George ; Pelletier, Leonard

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0537

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Steenbock-Lizzy Symposium (12th), 7-11 Jun 82, Madison, WI. Prepared in cooperation with Ohio State Univ., Columbus. Comprehensive Cancer Center.

ABSTRACT: The biological function of poly (ADP-R) based on its macromolecular properties is envisaged as a nucleic acid component of a cross linking system capable of promoting or inhibiting the regulatory effect of chromatin proteins on transcription. Two examples, the action of triiodothyronine and of chemical carcinogens illustrate this complex action of the homopolymer functioning as a protein modifier. Although DNA and RNA can be profitably studied in isolated systems without paying attention to poly (ADP R), integration with cellular physiology makes it mandatory to include poly (ADP-R) as a nucleic acid that possesses exclusively regulatory function.

DESCRIPTORS: \*Chromatin, \*Adenosine, Polymers, Proteins, Crosslinking(Chemistry), Carcinogens, Nuclei, Macromolecules

IDENTIFIERS: WUAFOSR2312A5, PEG1102F

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 670 6/5 6/16 5/10

CALIFORNIA UNIV SANTA BARBARA INST OF ENVIRONMENTAL  
STRESSEffects of Exhaustive Exercise on the Sleep  
of Men and Women.

(U)

APR 82 12P Bunnell, David E.; Bevier,  
Wendy; Horvath, Steven M.;  
CONTRACT: AFOSR-78-3534  
PROJ: 2312  
TASK: A1  
MONITOR: AFOSR TR-83-0522

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Psychophysiology, v20 n1  
p50-58 Jan 83.  
Effects of Exhaustive Exercise on the Sleep of Men  
and Women.

DESCRIPTORS: \*Clinical medicine, \*Sleep,  
\*Exercise(Physiology),  
\*Exhaustion(Psychological), \*Women, \*Males,  
\*Females, Stress(Physiology), Heart rate, Eye  
movements, Cardiovascular system, Cortisol,  
Psychophysiology, Research management, Reprints  
IDENTIFIERS: Slow-wave sleep, WUAFOSR2312A1,  
1983002F

(U)

(U)

AD A129 670

UNCLASSIFIED

PAGE

76

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 661 6/19 6/16 6/1

WISCONSIN UNIV-MADISON DEPT OF VETERINARY SCIENCE

Lung Metabolism, Function, and Morphology  
during Hyperoxic and Hyperbaric Exposure.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan-31 Dec 78,  
JAN 83 13P Will, James A.;  
CONTRACT: AFOSR-78 3497  
PROJ: 2312  
TASK: A1  
MONITOR: AFOSR TR-83-0515

## UNCLASSIFIED REPORT

ABSTRACT: Indolamine 2,3 dioxygenase has been  
found in human lung; this enzyme has potential as an  
important oxygen radical scavenger. MK421, is a  
non-sulphydryl group angiotensin-converting-enzyme  
inhibitor which was found not to alter adrenergic  
responsiveness, Neuron-specific-enolase and 5-HT  
immunoreactive lung neuroendocrine cell populations  
are not the same in the fetal monkey lung implying  
that either development rates are not the same or  
more than one population is present, a possible  
genetic relationship between cytochrome P-450  
enzyme induction and oxidative stress has been  
established implying that the susceptibility to  
oxygen toxicity may be inherited as well as  
environmental. Selenium and vitamin E deficiency  
may cause a decrease of the medial thickness in small  
pulmonary arteries implying that regulation of smooth  
muscle reactivity may be related to levels of organic  
hydroperoxides, lipid peroxidation, lipoxygenase or  
cyclooxygenase products, or a change in platelet  
activation status. The smallest subunit of Lipid  
A, Lipid X (mol.wgt. 711) has been characterized  
and causes all of the physiological effects on the  
pulmonary circulation seen with complete endotoxin,  
and finally Venous dispersion of lung 5-HT uptake  
kinetics using the bolus injection technique were  
different when trace doses were superimposed on  
constant background concentrations.

(U)

DESCRIPTORS: \*Oxygen, \*Toxicity, \*Serotonin,  
\*Tryptophan, Enzymes, Selenium, Vitamin E,  
Deficiencies, Hyperoxia, Hyperbaric conditions,  
Endotoxins, Peptides, Lung, Biological  
absorption, Kinetics, Peroxides

(U)

(U)

IDENTIFIERS: Indolamine-2,3 Dioxygenase,  
Enolase, Phenolamine, WUAFOSR2312A1,  
AD-A129 661

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 660 6/18

JOHN B PIERCE FOUNDATION LAB NEW HAVEN CONN

Microwaves and Thermoregulation: A Symposium.

(U)

DESCRIPTIVE NOTE: Final rept. 30 Jun 81-31 Dec 82.  
 FEB 83 127 Adair, Eleanor R. ;

CONTRACT: AFOSR-81-0211

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0514

## UNCLASSIFIED REPORT

ABSTRACT: The primary goal of the Symposium was to discuss how nonionizing radiation deposits thermalizing energy in biological tissues and the means by which this energy may be detected and effectively dealt with by the conscious organism. Much is known of the mechanisms by which endotherms achieve and maintain a characteristic stable internal body temperature in the face of environmental and internal thermal stresses. Nonionizing radio-frequency radiation provides a unique thermal challenge to deep as well as peripheral tissues that must be dealt with by these same mechanisms. Over the past several years, research into the biological effects of microwave exposure has advanced considerably; research emphasis has shifted from high intensity to low intensity exposure as scientists probe more and more subtle biological effects. With this shift in emphasis has come the realization that a body temperature increase in an experimental animal exposed to microwaves implies a breakdown of thermoregulatory mechanisms. On the other hand, low intensity exposures (previously dubbed non-thermal) usually initiate immediate and efficient thermoregulatory processes that ensure the constancy of the internal body temperature.

DESCRIPTORS: \*Microwaves, \*Temperature control, \*Symposia, \*Radiation effects, \*Infrared radiation, \*Tissues (Biology), \*Body temperature, \*Response (Biology), \*Humans, \*Behavior, \*Rhesus monkeys, \*Rats, \*Squirrel monkeys, \*Stability  
 IDENTIFIERS: WUAFOSR2312A5, PE61102F (U)

AD-A129 660

UNCLASSIFIED

PAGE

77

AD-A129 651

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 651 12/1 9/1 6/16

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL ENGINEERING

Signal Processing in Evoked Potential Research: Applications of Filtering and Pattern Recognition.

(U)

81 43P McGillem, Clare D. ; Aunon,

George I. ; Childers, Donald G. ;

CONTRACT: AFOSR-80-0152, PHS-NS-1534F

PROJ: 2313

TASK: A4

MONITOR: AFOSR TR-83-0524

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in CRC Critical Reviews in Bioengineering, v7 p225-265 Oct 81.  
 Reprint: Signal Processing in Evoked Potential Research: Applications of Filtering and Pattern Recognition.

DESCRIPTORS: \*Mathematical filters, \*Signal processing, \*Brain, \*Pattern recognition, \*Waveforms, \*Signal to noise ratio, \*Reprints  
 IDENTIFIERS: Evoked potential research, WLAFOSR2313A4, PE61102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 648 12/1 9/4

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA DEPT  
OF SYSTEMS ENGINEERINGRobust Wiener Filtering for Multiple Inputs  
with Channel Distortion.

(U)

DESCRIPTIVE NOTE: Interim rept.,

83 13P Chen, Cheng-Tie ; Kassam,

Saleem A. ;

CONTRACT: AFOSR-82-0022

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0507

UNCLASSIFIED REPORT

ABSTRACT: Robust Wiener filtering has previously been considered for the single-input (scalar) case where there is no channel distortion and where the signal to be estimated is the source signal itself. In this correspondence, the authors extend these results to the multiple-input (vector) case where linear channel distortion is allowed and the signal to be estimated is a linear-filtered version of the source signal. The results are obtained from those for the single-input case by modifying appropriately the constraints on signal and noise characteristics. Such a modification is motivated by an examination of the expression of the mean-square error for the optimum filter.

DESCRIPTORS: \*Mathematical filters, \*Signal processing, \*Linear filtering, Channels, Distortion, Estimates, Input, Multiple operation, Signal to noise ratio, Minimax technique, Modification, Matrices(Mathematics), Optimization, Spectra, Density

IDENTIFIERS: Robust procedures, Wiener filters, WUAFOSR2304A5, PE61102F

(U)

(U)

(U)

AD-A129 648

UNCLASSIFIED

PAGE

78

AD-A129 647

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 647 6/1

CALIFORNIA UNIV SAN FRANCISCO

Age-Dependent Variation of Rates of  
Polyadenosine-Diphosphoribose Synthesis by  
Cardiocyte Nuclei and the Lack of Correlation  
of Enzymatic Activity with Macromolecular  
Size Distribution of DNA.

(U)

DEC 80 6P Jackowski, George ; Kun, Ernest

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0536

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Biological  
Chemistry, v256 n8 p3667-3670, 25 Apr 81.  
Reprint: Age-Dependent Variation of Rates of  
Polyadenosine-Diphosphoribose Synthesis by  
Cardiocyte Nuclei and the Lack of Correlation of  
Enzymatic Activity with Macromolecular Size  
Distribution of DNA.

DESCRIPTORS: \*Adenosine, \*Ribose,  
\*Deoxyribonucleic acids, Polymers, Synthases,  
Biosynthesis, Organic phosphorus compounds,  
Nuclei, Rates, Reprints

IDENTIFIERS: Polyadenosine-diphosphoribose

(U)

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 645 6/16 14/2

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL  
ENGINEERINGPreprocessing for Improved Classification of  
Evoked Potentials, (U)

82 4P McGillem,Clare D. ;  
 Pomalaza,Carlos A. ;Aunon,Jorge I. ;  
 CONTRACT: AFOSR-80-0152  
 PROJ: 2313  
 TASK: A4  
 MONITOR: AFOSR TR-83-0520

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings of the IEEE  
 Conference on Engineering in Medicine and Biology,  
 p212-214 Sep 82.  
 Reprint: Preprocessing for Improved Classification  
 of Evoked Potentials.

DESCRIPTORS: \*Signals, \*Classification,  
 \*Electroencephalography, \*Voltage, \*Potentiometric  
 analysis, \*Symbols, Electrodes, Superlow  
 frequency, Signal to noise ratio, Extremely low  
 frequency, Focusing, Real time, Site selection,  
 Images, Voltmeters, Reprints (U)  
 IDENTIFIERS: \*Evoked potentials, Letters,  
 Preprocessing, Defocused letters, ERP(Event  
 Related Potentials), Potentials(Evoked).  
 Scalp, Electrode positions, Events,  
 PE61102F, WUAFOSR2313A4 (U)

AD-A129 645

UNCLASSIFIED

PAGE

79

AD-A129 617

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 617 8/11

CALIFORNIA INST OF TECH PASADENA SEISMOLOGICAL LAB

Localized Velocity Anomalies in the Lower  
Mantle, (U)

AUG 82 36P Lay,Thorne ;  
 REPT. NO. CONTRIB-3761  
 CONTRACT: F49620-81-C-0008, NSF-EAR81-08616  
 MONITOR: AFOSR TR-83-0526

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Geophysical Jnl. of the  
 Royal Astronomical Society, v72 p483-516 1983.  
 Reprint: Localized Velocity Anomalies in the Lower  
 Mantle.

DESCRIPTORS: \*Seismic waves, Velocity, Anomalies,  
 Earth mantle, Heterogeneity, Delay, Amplitude,  
 Reprints (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 612 7/4 11/9

CALIFORNIA UNIV SAN FRANCISCO

Spectral Analysis of the Conformation of  
Polyadenosine Diphosphoribose: Evidence  
Indicating Secondary Structure, (U)

AUG 82 8P Minaga, Takeyoshi ; Kun, Ernest

CONTRACT: F49620 81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0516

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Biological

Chemistry, v258 n2 p725-730, 25 Jan 83.

Reprint: Spectral Analysis of the Conformation of  
Polyadenosine Diphosphoribose: Evidence Indicating  
Secondary Structure.

DESCRIPTORS: \*Chromatographic analysis, \*Spectra,

\*Polymers, \*Adenosine, Phosphorus compounds,

Ribose, Reprints

IDENTIFIERS: Spectral analysis, Polyadenosine  
diphosphoribose, Secondary structure, PEG1102F,

WUAFOSR2312A5

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 610 6/1

CALIFORNIA UNIV SAN FRANCISCO

Decrease of Hepatic Mono and Oligo  
Adenosine Diphosphoribose Content and  
Augmentation of (14C) Ribose Incorporation  
during Induction of Growth by Bovine Growth  
Hormone in Hypophysectomized Rats, (U)

SEP 81 8P Romaschin, Alexander D. ; Kun,

Ernest ;

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0535

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Biochemical and  
Biophysical Research Communications, v102 n3 p952-  
957, 15 Oct 81.

Reprint: Decrease of Hepatic Mono and Oligo  
Adenosine Diphosphoribose Content and Augmentation  
of (14C) Ribose Incorporation during Induction of  
Growth by Bovine Growth Hormone in  
Hypophysectomized Rats.

DESCRIPTORS: \*Adenosine, \*Ribose, Organic  
phosphorus compounds, Polymers, Hormones, Rats,  
Reprints

(U)

IDENTIFIERS: Polyadenosine-diphosphoribose,

(U)

PEG1102F, WUAFOSR2312A5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 604 8/11 8/5 8/7

INSTITUTE FOR THE STUDY OF EARTH AND MAN DALLAS TX  
GEOPHYSICAL LABDevelopment of Automated Detection and  
Discrimination Techniques for Use at Regional  
to Teleseismic Distances.

(U)

DESCRIPTIVE NOTE: Final rept. 15 Oct 80-14 Oct 82,  
OCT 82 178P Herrin, Eugene ; Goforth, Tom ;  
CONTRACT: F49620-81-C-0010  
PROJ: 2309  
TASK: A1  
MONITOR: AFOSR TR-83-0528

UNCLASSIFIED REPORT

ABSTRACT: The resolution of the seismic sensors discussed in this report is limited either by the self-noise of the system or the ambient ground noise at the observing site. The resolution limits of a particular system are frequency-dependent. A major objective of the designer is to insure that seismic sensors are available which will be limited in resolution only by the ambient background noise at the quietest sites over the frequency band of interest in treaty verification research. This report presents a review of the data currently available on the limiting resolution of the most advanced instruments used in this research program. (Author)

(U)

DESCRIPTORS: \*Seismic waves, \*Seismic detection, Nevada, Land areas, Nuclear explosions, Underground explosions, Gravity, Mathematical models, Gravity anomalies, Structural geology, Texas, Seismological stations, Seismometers, Resolution, Noise

(U)

IDENTIFIERS: Body waves, Yucca Flat, Seismic noise, PE81102F, WUAFOSR2309A1

(U)

AD-A129 604

UNCLASSIFIED

PAGE

81

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 600 20/13 11/3 9/2

SAGINAW VALLEY STATE COLL UNIVERSITY CENTER MI DEPT OF  
PHYSICSTransient Heat Transfer in Coated  
Superconductors.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Jun 81-1  
Sep 82,  
OCT 82 54P Menard, Albert R. ;  
REPT. NO. SP-80-10-112  
CONTRACT: AFOSR-81-0184  
PROJ: 2301  
TASK: D9  
MONITOR: AFOSR TR-83-0504

UNCLASSIFIED REPORT

ABSTRACT: Computer simulation of transient heat transfer from coated superconductors to liquid helium have revealed that coating a superconductor with certain new materials, called Laketites, instead of traditional insulation, such as GE7031, substantially improves the ability of the superconductor to withstand transient heat pulses without making the transition to the normal i.e. non-superconducting state. In the best cases, the length of time that constant heating can be withstood is improved twenty fold. This report shows that the most important property of these new materials is their increased thermal conductivity relative to current materials. The highest thermal conductivity materials designed SC-2, SC-3 are the most desirable for further research and development. The increased specific heat of the Laketites is desirable, but not crucial. Furthermore, the thickness of the coating has little effect on the improved ability of the superconductor to withstand heat pulses. This report recommends a vigorous program of further development of the Laketites. A complete theoretical background of the computer simulation and examples of the programs used are also included in this report. (Author)

(U)

DESCRIPTORS: \*Heat transfer, \*Transients, \*Coatings, \*Superconductors, \*Computerized simulation, Test and evaluation, Liquid helium, Constants, Thermal conductivity, High rate, Thickness, Pulses, Theory, Boundary layer, Differential thermal analysis, Circuits, Copper

(U)

(U)

IDENTIFIERS: Coated superconductors, Laketites, AD-A129 600

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 599 12/1 9/5

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA DEPT  
OF SYSTEMS ENGINEERINGOptimum Quantization of Fir Wiener and  
Matched Filters. (U)DESCRIPTIVE NOTE: Technical rept.,  
83 5P Chen, Cheng-Tie ; Kassam,

Saleem A. ;

CONTRACT: AFOSR-82-0022

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0506

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings IEEE

International Conference on Communications, p1-4 Jun  
83.Reprint: Optimum Quantization of Fir Wiener and  
Matched Filters.

DESCRIPTORS: \*Algorithms, \*Recursive filters,

\*Matched filters, \*Quantization, Optimization,

Signal processing, Coefficients, Numerical methods

and procedures, Reprints (U)

IDENTIFIERS: \*Wiener filters, Finite impulse

response filters, WUAFOSR2304A5, PE61102F (U)

AD-A129 599

UNCLASSIFIED

PAGE

82

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 582 9/1 17/2

CALIFORNIA UNIV IRVINE DEPT OF ELECTRICAL ENGINEERING

Thin-Film Guided-Wave Devices for  
Integrated/Fiber Optic Signal Processing  
and Communications. (U)DESCRIPTIVE NOTE: Annual scientific rept. 1 Oct 81-30  
Nov 82.

APR 83 25P Tsai, Chen S. ;

CONTRACT: AFOSR-80-0288

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0501

## UNCLASSIFIED REPORT

ABSTRACT: Integrated or Guided-Wave Optics is an emerging technology that has the ultimate potential of integrating miniature optical components such as laser light sources, modulators, switches, deflectors, lenses, prisms, and detectors in a common substrate. The resultant integrated optic circuits and subsystems are expected to have a number of advantages over the conventional bulk optical systems in certain areas of applications. Some of the advantages include smaller size and lighter weight, wider bandwidth, lesser electrical drive power requirement, greater signal accessibility, and integratability. The integrated optic circuits are also expected to possess advantages in stability, reliability, ruggedness, and ultimate cost. It has been recognized for some time that the most immediate applications of integrated optics lie in the areas of wideband multichannel communications and signal processing (for both civilian applications such as fiber optic systems and military hardware such as sensors and radars). The general objectives of this research program are to study the basic physical mechanisms/phenomenon of new and novel guided-wave devices with application to wideband multichannel optical information processing.

DESCRIPTORS: \*Waveguides, \*Thin films, \*Fiber optics, \*Integrated systems, \*Multichannel communications, \*Signal processing, Deflectors, Modulators, Broadband, Detectors, Substrates, Physical properties, Research management, Sizes(Dimensions), Optical equipment, Laser beams, Reliability, Access, Lightweight, IDENTIFIERS: Magnetostatic surface waves, (U)

AD-A129 582

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 579 7/4 11/7

CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF METALLURGY AND MATERIALS SCIENCE

Structural and Kinetic Properties of Graphite Intercalation Compounds.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 78-28 Feb 83,  
 APR 83 185P Chung, Deborah D. L. ;  
 CONTRACT: AFOSR-78-3536  
 PROJ: 2306  
 TASK: D2  
 MONITOR: AFOSR TR-83-0532

## UNCLASSIFIED REPORT

ABSTRACT: An extensive investigation was undertaken on the mechanism, kinetics and thermodynamics of intercalation of graphite. It was found that bromine intercalate transport in graphite at room temperature occurred by solid-state intercalate displacement. Upon exposure by stage-2 graphite-bromine to IC1, bromine was expelled by the incoming IC1, which dissolved the remaining bromine to form a solid solution with the IC1 in-plane superlattice. During bromine intercalation, an intercalate front moved toward the center of the graphite. The first time-temperature-transformation (ITT) diagram describing the stage evolution during intercalation was obtained. The ITT-curves for bromine intercalation were C-shaped for the growth of each stage, suggesting diffusion-controlled kinetics at low temperatures and interface-controlled kinetics at high temperatures. The pressure-temperature equilibrium diagram for stages 2-4 of graphite-bromine was determined. Based on the change in free energy from stage of stage and the intercalate diffusion rate, the kinetics of bromine intercalation of graphite was modeled.

(U)

DESCRIPTORS: \*Graphite, \*Layers, \*Structural properties, \*Reaction kinetics, Bromine, Interactions, Crystal lattices, Symmetry(Crystallography), Chemical compounds, Phase transformations, Temperature, Desorption, Exfoliation, Expansion, Pyrolytic graphite, X ray diffraction, Microscopy, Thermogravimetric analysis, Dilatometers, Acoustic measurement  
 IDENTIFIERS: Intercalation compounds, WUAFOSR2306D2, PE61102F

AD-A129 579

## UNCLASSIFIED

PAGE

83

AD-A129 575

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AJ-A129 575 6/1

CALIFORNIA UNIV SAN FRANCISCO CARDIOVASCULAR RESEARCH INST

Cell Specific Response of Cardiac Poly ADP-R and DNA Synthesis to Circulatory Stress,

(U)

DEC 81 3P Jackowski, G. ; Heymann, M.  
 A. ; Rudolph, A. M. ; Kun, E. ;  
 CONTRACT: F49620-81-C-0007, PHS-HL-24056  
 PROJ: 2312  
 TASK: A5  
 MONITOR: AFOSR TR-83-0540

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Experientia, v38 p1068-1069 1982.

Reprint: Cell Specific Response of Cardiac Poly ADP-R and DNA Synthesis to Circulatory Stress.

DESCRIPTORS: \*Synthesis, \*Deoxyribonucleic acids, Polymers, Cells(Biology), Nuclei, Inhibition, Metabolism, Response(Biology), Biosynthesis, Stress(Physiology), Reprints  
 IDENTIFIERS: PEG1102F, WUAFOSR2312A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 571 20/6 20/8

CORNELL UNIV ITHACA NY

Study of a Nuclear Gamma-Ray Laser. (U)

DESCRIPTIVE NOTE: Interim technical rept.,  
JUN 83 16P Liboff, Richard L. ;

Heffernan, Daniel M. ; Yaakobi, Barukh ;

REPT. NO. R-3-83

CONTRACT: AFOSR 78-3574

PROJ: 2301

TASK: A3

MONITOR: AFOSR TR-83-0527

UNCLASSIFIED REPORT

ABSTRACT: In this analysis we describe briefly a possible approach to the realization of a gamma-ray laser ('graser') 1.2. The proposed scheme has its basis in certain long-lived excited states among the heavier nuclei. Decay of such states, for the most part, gives rise to high-order multipole radiation. These excited states are populated through either beta decay or electron capture. The device presumes that a collection of such long-lived excited states is unstable to induced resonant emission. Decay of parent nuclei serve as the pumping mechanism in the proposed lasing scheme. (Author)

DESCRIPTORS: Lasers, Gamma rays, \*Nuclear properties, Nuclear pumping, Decay, Nuclear radiation, Multipolarity, Electron capture, Emission, Resonance, Nuclei

IDENTIFIERS: Nuclear gamma ray lasers, PE61102/F, WUAFOSR2301A3

(U)  
(U)  
(U)

AD-A129 571

UNCLASSIFIED

PAGE

84

AD-A129 570

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 570 11/2 13/8 20/11

ROCKWELL INTERNATIONAL THOUSAND OAKS CA SCIENCE CENTER

Strengthening and Strength Uniformity of Structural Ceramics. (U)

DESCRIPTIVE NOTE: Annual rept. no 2. 1 Feb 82-31 Jan 83, MAY 83 85P Lange, F. F. ;

REPT. NO. SC5295.2AR

CONTRACT: F49620-81-C-0036

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0531

UNCLASSIFIED REPORT

ABSTRACT: Stresses created by differential sintering, due to differences in initial bulk density, were determined experimentally. The experiments entailed determining the shrinkage rates of a powder isostatically pressed to two different bulk densities. Using this information, stresses were determined by forcing the slower densifying compact to shrink at the same rate as the faster densifying compact and measuring the resulting forces with a load cell. Maximum stresses (between 200 and 400 psi) were observed to occur in the intermediate stage of densification. Despite larger differential strains at higher temperatures, stresses decreased to zero at the latter stage of densification. Viscoelastic experiments, of the stress relaxation type were performed. Results showed that the sintering specimen was more rigid at lower temperatures and more fluid-like at higher temperatures, to explain the development of maximum stresses at intermediate temperatures.

DESCRIPTORS: \*Ceramic materials, \*Sintering, \*Strength(Mechanics), Agglomerates, Mathematical models, Differentials(Mechanical), Phase transformations, Toughness, Stress relaxation, Viscoelasticity, Reaction kinetics, Rigidity, Shrinkage, Isostatic pressing, Density, Bulk materials, Aluminum, Oxides, Zirconium, Structural analysis, Microstructure

IDENTIFIERS: PE61102F, WUAFOSR2306A2

(U)  
(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 559

12/1

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

An Iterated Logarithm Law Result for  
Extreme Values from Gaussian Sequences.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 19P McCormick, William P. ;

REPT. NO. TR-29

CONTRACT: F49620-82-C-0009

PROJ: 2304

TASK: A5

MONITOR: AFDSR TR-83-0510

UNCLASSIFIED REPORT

DESCRIPTORS: \*Stochastic processes, \*Statistical  
processes, \*Logarithm functions, \*Iterations,  
Sequences(Mathematics), Gaussian quadrature,  
Value, Vector analysis, Stationary,  
Points(Mathematics), Convergence, Random  
variables  
IDENTIFIERS: PE61102F, WUAFDSR2304A5

(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 554 20/3 20/5 9/3 14/2

TEXAS TECH UNIV LUBBOCK DEPT OF ELECTRICAL  
ENGINEERINGCoordinated Research Program in Pulsed  
Power Physics.

(U)

DESCRIPTIVE NOTE: Annual rept. no. 3, 1 Oct 81-30 Sep

82.

DEC 82 283P Kristiansen, M. ; Hagler, M. ;

Craig, J. ; Hatfield, L. ; Schaefer, G. ;

CONTRACT: F49620-79-C-0191

PROJ: 2301

TASK: A7

MONITOR: AFOSR TR-83-0503

UNCLASSIFIED REPORT

ABSTRACT: Eight program elements related to pulsed  
power research are described. These program  
elements form a multi-disciplinary, coordinated  
program whose main emphasis is to gain improved  
understanding of high power, repetitive closing and  
opening switches. The main emphasis is concerned  
with triggering of discharges in gas filled spark  
gaps and the associated electrode erosion and  
insulator damage. Considerable efforts are also  
being made to understand the limitations and  
fundamental discharge phenomena in fast opening  
switches for inductive energy storage. A novel  
electromechanical pulse generator which promises to  
deliver fast, repetitive pulses to a load is also  
being investigated. (Author)

(U)

DESCRIPTORS: \*Pulse generators, \*Switching circuits,  
\*Electromechanical converters, \*Spark gaps, \*Laser  
beams, Electromechanical devices, Gas discharges,  
Breakdown(Electronic Threshold), Energy storage,  
High power, Electron beams, Electric arcs,  
Opening(Process), Transients, Pulses,  
Spectroscopy, Excitation, Research management,  
Gases, Physics, Power, Erosion, Filling,  
Surfaces, Switches

(U)

IDENTIFIERS: Laser triggers, Electromechanical  
pulsers, Surface physics, EPA(Electromechanical  
Pulse Amplifiers), Opening switches, Time  
varying inductors, Inductive storage, Insulator  
damage, PE61102F, WUAFOSR2301A7

(U)

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 553 12/1

CITY COLL NEW YORK DEPT OF MATHEMATICS

IFR (Increasing Failure Rate) for Repairable Systems.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
APR 83 10P Chaganty, N. R. ;

REPT. NO. CUNY-MB4, TR-82-04-AFOSR

CONTRACT: AFOSR-82-0024

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0511

## UNCLASSIFIED REPORT

ABSTRACT: Document considers k-out-of-n system with independent repairable components. It assumes that the repair and failure distributions are exponential with parameters  $\mu$  (sub 1, ...,  $\mu$  sub n) and  $\lambda$  (sub 1, ...,  $\lambda$  sub n) respectively. In this paper the author shows that if  $\lambda$  sub i =  $\delta$  for all i then the life distribution of the system is Increasing Failure Rate.

(U)

DESCRIPTORS: \*Life tests, \*Distribution functions, \*Failure, \*Repair, Exponential functions,

(U)

Parameters, Markov processes

IDENTIFIERS: IFT(Increasing Failure Rate),  
Increasing Failure Rate, \*Life distribution.

(U)

Markov chains, PEG1102F, WUAFOSR2304A5

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 544 12/1

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA DEPT  
OF SYSTEMS ENGINEERINGRobust Hypothesis Testing and Robust Time  
Series Interpolation and Regression,

(U)

82 12P Kassam, Saleem A. ;  
CONTRACT: AFOSR-82-0022

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0509

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Time Series  
Analysis, v3 n3 p185-194 1982.

Reprint: Robust Hypothesis Testing and Robust  
Time Series Interpolation and Regression.DESCRIPTORS: \*Time series analysis, \*Minimax  
technique, \*Test methods, Interpolation,  
Regression analysis, Hypotheses, Reprints

(U)

IDENTIFIERS: \*Robust procedures, WUAFOSR2304A5,  
PEG1102F

(U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 540 6/1

CALIFORNIA UNIV SAN FRANCISCO

Quantitative Isolation of Oligo- and Polyadenosine Diphosphoribosylated Proteins by Affinity Chromatography from Livers of Normal and Dimethylnitrosamine-Treated Syrian Hamsters.

JAN 81 8P Romaschin, Alexander D. ; Kirsten, Eva ; Jackowski, George ; Kun, Ernest ;

CONTRACT: F49620-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0533

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Biological Chemistry, v256 n15 p7800-7805, 10 Aug 81. Reprint: Quantitative Isolation of Oligo- and Polyadenosine-Diphosphoribosylated Proteins by Affinity Chromatography from Livers of Normal and Dimethylnitrosamine-Treated Syrian Hamsters.

DESCRIPTORS: \*Adenosine, \*Proteins, \*Nitrosamines, Liver, Hamsters, Methyl radicals, Nuclei, Syntheses, Reprints  
IDENTIFIERS: Dimethylnitrosamine, Diphosphoribose, WUAFOS2312A5, PE61102F

(U)

(U)

AD A129 540

UNCLASSIFIED

PAGE

87

AD-A129 537

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 537 6/19

KENTUCKY UNIV LEXINGTON WENNER-GREN RESEARCH LAB

Cardiovascular Regulation in Canines during Low-Frequency Acceleration,

(U)

AUG 81 14P Knapp, C. F. ; Evans, J. M. ; Randall, D. C. ; Marquis, J. A. ;

CONTRACT: F49620-83-K-0002, F49620-79-C-0014

PROJ: 2312

TASK: A1

MONITOR: AFOSR TR-83-0523

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in American Jnl. of Physiological (Heart Circ. Physiol.), v243 n12 pH998-H1009 1982. Reprint: Cardiovascular Regulation in Canines during Low-Frequency Acceleration.

DESCRIPTORS: \*Acceleration, \*Stress(Physiology), \*Cardiovascular system, Control, Blood pressure, Heart rate, Dogs, Reprints

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2312A1

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 524 5/9

DALHOUSIE UNIV HALIFAX (NOVA SCOTIA) CENTRE FOR RESEARCH  
IN SENSORY PSYCHOLOGY AND MEDICAL PHYSICSAssessment and Development of Oculomotor  
Flying Skills by the Application of the  
Channel Theory of Vision.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 81-30 Sep 82.

DEC 82 74P Regan, D. ;

CONTRACT: AFOSR-78-3711

PROJ: 2313

TASK: A5

MONITOR: AFOSR TR-83-0541

UNCLASSIFIED REPORT

ABSTRACT: Pilot's landing and formation flight performance on the ASPT simulator correlated with visual sensitivity to an expanding flow pattern and with depth tracking test errors. Aircraft flying grades correlated with flow pattern test results. As stimuli for motion in depth, either texture changes alone or changes in object size alone are effective, but the presence of static texture dramatically reduces the effectiveness of changes in object size. In contrast, to the traditional emphasis on static picture quality in visual simulation, this finding emphasizes the importance of dynamic parameters in simulation fidelity. In terms of monocular two-dimension simulation of motion in depth, our findings suggest that in many conditions the presence of texture reduces stimulus effectiveness, and at best the presence of texture adds little to the effectiveness of an untextured stimulus. Subjects cannot accurately locate the center of expansion of an expanding flow pattern in the presence of translational motion of the retinal image when there is no accompanying geometrical distortion. However, subjects are very sensitive to geometrical distortions of the retinal image, and can accurately judge the location of the maximum rate of object magnification even in the presence of translational motion.

(U)

DESCRIPTORS: \*Pilots, \*Flight simulators, \*Skills,  
\*Vision, Tracking, Errors, Patterns, Motion,  
Images, Retina

(U)

IDENTIFIERS: WUAFOSR2313A5, PEG1102F

AD-A129 534

UNCLASSIFIED

PAGE

88

AD-A129 529

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 529 5/2 9/2

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Concurrent Updates and Retrieval in  
Distributed Database Systems.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 81-31 Dec 82.  
JAN 83 13P Stonebraker, M. R. ; Wong, E.

CONTRACT: AFOSR-78-3596

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0512

UNCLASSIFIED REPORT

ABSTRACT: At its inception, this project was designed to represent a comprehensive program of research in the field of distributed database management. The problems to be dealt with were to include the three major topics in distributed database: query processing, concurrency control and crash recovery. In addition, the problem of interconnecting heterogeneous databases was also proposed. To a substantial extent, major progress has been achieved in all these areas. In this report a summary of the principal findings is presented.

(U)

DESCRIPTORS: \*Data bases, Algorithms, Distributed data processing, Integration, Control, Interrogation, Heterogeneity

(U)

IDENTIFIERS: \*Distributed data bases, Data base management systems, Query processing, Crash recovery, WUAFOSR2304A2, PEG1102F

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 526 21/4 6/3

NORTH DAKOTA STATE UNIV FARGO DEPT OF ZOLOGY

Identification and Quantification of the Water Soluble Components of JP-4 and a Determination of Their Biological Effects upon Selected Freshwater Organisms.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 30 Sep 81-29

Sep 82, DEC 82 161P Brammer, J. D.; Puyear, R. L.;

CONTRACT: AFOSR-78-3709

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0513

UNCLASSIFIED REPORT

ABSTRACT: This phase of the research entailed:

I. Repeating and completing work on water solubilities of major JP-4 jet fuel alkylbenzenes at five different temperatures and four different salinities. Work is nearly complete for determining the maximal water solubilities of JP-4 derived alkylbenzenes. II. LC50 and MATC for toluene in fathead minnow embryos, 1-day posthatch protolarvae and 30-day old fish has been published. III. Metabolism of benzene and toluene, aminopyrine demethylase and aniline hydroxylase activities by liver subcellular fractions from control and induced rats activities. IV. Toluene metabolism and activities of aminopyrine demethylase and aniline hydroxylase in the liver of Bluegill sunfish Lepomis ssp. V. Bioaccumulation and tissue distribution of 14C benzene and 14C toluene by fathead minnows in a closed static bioassay system. VI. The prehatching development of the fathead minnow. VII. Effects of toluene on the prehatching development of the fathead minnow. (U)

DESCRIPTORS: Jet engine fuels, \*Water soluble materials, \*Fresh water, \*Minnows, \*Metabolism. Environmental tests, Liver, Benzene, Alkyl radicals, Toluene, Contamination, Anilines, Hydroxylases, Toxicity, Fishes, Embryos, Aquatic animals, Bioassay, Salinity, Rats  
IDENTIFIERS: JP-4 fuel, Biological effects, White rats, Fathead minnows, Bioaccumulation, Aminopyrine demethylase, Bluegill sunfish, (U)

AD-A129 526

UNCLASSIFIED

PAGE

89

AD-A129 522

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 522 5/10

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL ENGINEERING

Comparison of Linear and Quadratic Classification of Event-Related Potentials on the Basis of Their Exogenous or Endogenous Components,

(U)

JUL 81 9P Aunon, Jorge I.; McGillem, Clare D.; O'Donnell, Robert O.;

CONTRACT: AFOSR-80-0152

PROJ: 2313

TASK: A4

MONITOR: AFOSR TR-83-0521

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Psychophysiology, v19 n5 p531-537 1982.

Reprint: Comparison of Linear and Quadratic Classification of Event-Related Potentials on the Basis of Their Exogenous or Endogenous Components.

DESCRIPTORS: \*Psychophysiology, Bioelectricity, Patterns, Classification, Waveforms, Electrodes, Reprints (U)

IDENTIFIERS: WUAFOSR2313A4, PEG1102F (U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 520 12/1 6/5

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL  
ENGINEERING

Effects of Cooling EEG on Latency  
Parameters of Evoked Potentials.

(U)

82 6P Mettlem, Clare D.; Yu,

Kai for (Author), George I.;

CONTRACT: AFOSR-80-0152

PROJ: 2313

TASK: A4

MONITOR: AFOSR TR-83-0519

UNCLASSIFIED REPORT

SUPPLEMENTARY DATA: In Proceedings of the Annual  
Meeting of the Society for Neuroscience, 1982.

Cellular Physiology, viii suppl 3 p85-70 1982.

Effects of Cooling EEG on Latency

Parameters of Evoked Potentials.

DESCRIPTION: Mathematical models, Polynomials,

Polynomials, Polynomials, Polynomials, Polynomials,

Polynomials, Polynomials, Polynomials, Polynomials,

Polynomials, Polynomials, Polynomials, Polynomials,

Polynomials, Polynomials, Polynomials, Polynomials,

Polynomials, Polynomials, Polynomials, Polynomials,

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 519 6/1

CALIFORNIA UNIV SAN FRANCISCO

The Influence of Trifluoromethine on  
Polyadenosine Diphosphoribose Polymerase and  
RNA Synthesis in Cardiac Nuclei.

(U)

MAR 81 8P Jackowski, George; Kun, Ernest

;

CONTRACT: F43020-81-C-0007

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0538

UNCLASSIFIED REPORT

SUPPLEMENTARY DATA: In Int. of Molecular and  
Cellular Cardiology, viii suppl 3 p85-70 1982.

Effects of Trifluoromethine on

Polyadenosine Diphosphoribose Polymerase and RNA

Synthesis in Cardiac Nuclei.

DESCRIPTION: Enzymes, Ribonucleic acids,

Adenosine, Polymers, Polymers, Polymers,

IDENTIFIERS: Trifluoromethine, Polymers,

RNA D542312A5, P161102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 518 6 5

WISCONSIN UNIV MADISON

A. Identification for Preparing the Chronic Lung Transplant Study in Group.

(U)

OCT 31 5P Green, Marilyn J. (Friedman, Deborah F., Helgerson, Richard, Will, James A.)

CONTRACT: AFOSR 73-3497  
PROJ: 2312  
TASK: A1

MONITOR: AFOSR TR 83-0517

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Applied Physiology, Respirat. Environ. Exercise Physiol., 32:66, 1985, 1987.  
Abstract: A modification for preparing the Chronic Lung Transplant Study in Group.

DESCRIPTORS: \*Fistulas, Anatomical models, Lung, Lung, Sleep, Complaints  
IDENTIFIERS: WUAFUSK2312A1, FE61102F

(U)  
(U)

AD A129 518

UNCLASSIFIED

PAGE

91

AD-A129 480

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 480 6/16

SALK INST SAN DIEGO CALIF

Reciprocal Neural Pathways and Associative Networks.

(U)

DESCRIPTIVE NOTE: Final technical rept. 1 Nov 81-31

OCT 82, DEC 82 31P Critch, Francis H. C. ;  
Mitelson, Gracie J. ;CONTRACT: AFOSR 82-0042  
PROJ: 2312

TASK: A1

MONITOR: AFOSR TR 83-0542

## UNCLASSIFIED REPORT

ABSTRACT: This report of covers four separate but related topics. The first concerns the suggestion that dendritic spines may twitch -- that is, change shape rapidly. This has already been published and appears as Appendix A. The second concerns the patterns of long-range connections in the visual cortex. This also has been published and is reproduced as Appendix B. The third topic concerns the problem of memory storage at higher levels in the cortex. This is in an preliminary stage and only a very broad account is given here. The fourth topic is the most speculative and concerns the function of Rapid Eye Movement Sleep and the nature of dreams. A draft paper on this is reproduced as Appendix C. The body of the report gives brief accounts of all these topics and shows how they are linked together.

(U)

(U)

(U)

DESCRIPTORS: \*Visual cortex, \*Cerebral cortex, Patterns, Networks, Memory(Psychology), Sleep, Dendritic structure, Rapid eye movement in sleep  
IDENTIFIERS: WUAFUSK2312A1, FE61102F

AD A129 518

UNCLASSIFIED

PAGE

91

AD-A129 480

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 441 8/11

NATO ADVANCED STUDY INST OSLO (NORWAY)

Identification of Seismic Sources -  
Explosions or Underground Explosion.  
Proceedings of the NATO Advanced Study  
Institute held at Veksemoen, Oslo, Norway,  
September 8-18, 1980.

Ed. edp. R. Eyslein S. ;  
R. Eyslein S. ;  
CONTRACT: AFOSR-RO-0193  
PAGE: 2309  
TASK: A1  
MONITOR: AFOSR TR-83-0497

UNCLASSIFIED REPORT

Availability: Kluwer Boston, Inc., 190 Old  
Sturbridge St., Hingham, MA 02043 HC \$88.00 (No  
charges furnished by DTIC/NTIS).  
Notes: 1. Contents: Earthquake Source  
Modelling; Explosion Source Modelling;  
Seismic Source Parameter Estimation; Seismic  
Source and Synthetic Seismic Wave Analysis;  
Scattering and Earth Heterogeneities; Signal  
Analysis; Seismic Source Discrimination;  
Relationships in Seismic Instrumentation;  
Seismic Data Centers.  
2. Includes: 1. Seismic Waves, Earthquakes, Nuclear  
Explosions, Seismic detection, Sources,  
Mathematical models, Waveforms, Signal processing,  
Scattering, Earth crust, Heterogeneity,  
Discrimination, Data processing, Symposia, Bo  
IDENTIFIERS: Synthetic seismograms, \*Seismic  
sources, PEG1102F, WUAFOSR2309A1

AD A129 441

UNCLASSIFIED

PAGE

92

AD A129 437

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 437 20/11 20/5

CORNELL UNIV ITHACA NY

Kinetic theory. (U)

DESCRIPTIVE NOTE: Annual technical rept. Mar 82-Feb  
83, APR 83 9P Liboff, Richard L. ;

REPT. NO. R-2-83  
CONTRACT: AFOSR-78-3574  
PROJ: 2301  
TASK: A3  
MONITOR: AFOSR TR-83-0497

UNCLASSIFIED REPORT

ABSTRACT: A review of work performed under  
contract AFOSR 78-3574 during the 1982-1983 support  
interval is presented. A list of titles and  
abstracts of technical reports issued during this  
period is included. A brief summary is presented of  
lectures delivered at the University of  
California on contractual research. The report  
concludes with a description of ongoing research.  
(U)  
DESCRIPTORS: Kinetic theory, Abstracts, Laser  
beams, Laser target interactions, Recombination  
reactions (U)  
IDENTIFIERS: PEG1102F, WUAFOSR2303A3 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 406 20/4 21/1

MCDONNELL DOUGLAS RESEARCH LABS ST LOUIS MO

Unsteady Transonic Flow in a Two-Dimensional Diffuser: Interpretation of Experimental Results.

(U)

DESCRIPTIVE NOTE: Scientific rept. 1 Apr 81-31 Mar 82,  
MAR 82 76P Sajben, Miklos ; Bogar, Thomas

J. :

REPT. NO. MDC-Q0779

CONTRACT: F49620-77-C-0082

PROJ: 2307

TASK: A4

MONITOR: AFOSR TR-83-0453

## UNCLASSIFIED REPORT

ABSTRACT: Experimental data obtained over a four-year period on transonic, oscillatory diffuser flows were examined and compared with the predictions of simple, one-dimensional theories. Acoustic theory, accounting for upstream- and downstream-propagating acoustic waves, correctly describes pressure perturbations in attached flows, provided the wave reflection process at the shock is properly modeled. Unsteady boundary layers strongly influence pressure perturbations in separated flows and velocity perturbations in both attached and separated flows, with the result that acoustic theory fails in these cases. The boundary layers display slow, transverse, downstream-moving waves (termed interface waves) that strongly influence the core flow velocity and pressure perturbations through displacement effects. The Eulerian velocity perturbations associated with this wave motion are large within the boundary layer. A one-dimensional model was constructed, incorporating both acoustic waves and the interface waves; their effect is most evident in the phase-angle distributions and in the predicted natural frequencies.

(U)

DESCRIPTORS: \*Transonic flow, \*Two dimensional flow, \*Flow fields, \*Diffusers, Oscillation, Air breathing engines, Internal, Acoustic waves, Wave propagation, Pressure, Perturbations, Reflection, Shock, Boundary layer, Unsteady flow, supersonic diffusers, Velocity, Euler angles, Interfaces, Mathematical models, One dimensional, Resonance, Mathematical prediction, Amplitude

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2307A4

AD-A129 406

## UNCLASSIFIED

PAGE

93

AD-A129 396

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 396 9/2 12/1

ARIZONA STATE UNIV TEMPE GROUP FOR COMPUTER STUDIES OF STRATEGIES

On Automatic Generation of Descriptive and Normative Theories.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
MAR 83 5P Findler, Nicholas V. ;

CONTRACT: AFOSR-82-0340

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0486

## UNCLASSIFIED REPORT

ABSTRACT: This paper discusses a large-scale programming system, the Quasi-Optimizer (QO), that has four major objectives: (1) to observe and measure adversaries' behavior in a competitive environment, to infer their strategies and to construct a computer model, a descriptive theory, of each; (2) to identify strategy components, evaluate their effectiveness and to select the most satisfactory ones from a set of computed descriptive theories; (3) to combine these components in a quasi-optimum strategy that represents a normative theory in the statistical sense; and (4) to provide information as to in which regions a given strategy is most proficient, to a meta-strategy. It will then shift the domain of confrontations between the strategy and its adversaries to the regions specified and, thereby, increase the effective quality of the strategy. (Author)

(U)

(U)

DESCRIPTORS: \*Computer programs, \*Computerized simulation, \*Models, \*Comparison, \*Normalizing(Statistics), Identification, Theory, Environments, Observation, Optimization, Measurement, Strategy

(U)

(U)

IDENTIFIERS: Normative theories, Descriptive theories, Computerized descriptive theory, Quasi optimizer, Competitive environment, WUAFOSR2304A2, PE61102F

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 359 12/1

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

Prediction of Future Observations in Polynomial Growth Curve Models. Part 1. (U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 17P Rao, C. Radhakrishna ;

REPT. NO. 83 05 PT-1

CONTRACT: F49620-82 K 0001

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR 83-0491-PT-1

UNCLASSIFIED REPORT

DESCRIPTIVE NOTE: Presented at the Indian

Statistical Inst., Calcutta, Dec 81, during the

National Jubilee Celebrations.

ABSTRACT: The problem considered is that of simultaneous prediction of future measurements on a given number of individuals using their past measurements. Assuming a polynomial growth curve model, a number of methods are proposed and their relative efficiencies in terms of the compound mean square prediction error (CMSPE) are compared.

There is a similarity between the problem of simultaneous estimation of parameters as considered by Rao and that of simultaneous prediction of future observations. It is found that the empirical Bayes predictor (EBP) based on the empirical Bayes estimator (EBE) of the unknown vector parameters in general linear models proposed by the author (Rao, 1975) has the best possible efficiency compared to the others studied. The problem of determining the appropriate degree of the polynomial growth curve is also studied from the point of view of minimizing the CMSPE. (Author)

DESCRIPTORS: Polynomials, \*Curves(Geometry),

Mathematical models, \*Bayes theorem,

Growth(General), Predictions, Estimates,

Decision theory, Measurement, Mean, Errors,

Graphs, Vector analysis

IDENTIFIERS: Growth curves, Growth curve models,

CMSPE(Compound Mean Square Error), James

Stein estimators, EBP/Empirical Bayes

prediction), PE51102F, WUAFOSR2304A5 (U)

AD A129 359

UNCLASSIFIED

PAGE

94

AD A129 344

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 344 12/1

BOEING COMPUTER SERVICES CO SEATTLE WA MATHEMATICS AND MODELING UNIT

A Structurally Stable Modification of Hellerman-Rarick's P4 Algorithm for Reordering Unsymmetric Sparse Matrices. (U)

DESCRIPTIVE NOTE: Technical rept.,

APR 83 50P Erisman, A. M. ; Grimes, R. G. ; Lewis, J. G. ; Poole, W. G. , Jr. ;

REPT. NO. MM-3

CONTRACT: F49620-81-C-0072

PROJ: 2304

TASK: A3

MONITOR: AFOSR TR-83-0479

UNCLASSIFIED REPORT

ABSTRACT: The Partitioned Preassigned Pivot procedure of Hellerman and Rarick reorders unsymmetric sparse matrices in order to decrease computation and storage requirements when solving sparse systems of linear equations. It is known that the algorithm, when applied to matrices which are not structurally singular, can generate intermediate matrices which are structurally singular, causing a breakdown in the elimination process. In this paper its authors present the algorithm in a structured, top-down, form and explain several of the problems which may occur. We then define a modification of the algorithm to treat the difficulties. This revised version of the algorithm will never produce structurally singular intermediate matrices if the original matrix is not structurally singular. Test results with this modified algorithm show that it is as effective as the Markowitz algorithm as a preconditioner when the block structure of the new algorithm is recognized and used.

DESCRIPTORS: \*Algorithms, \*Sparse matrix,

Stability, Modification, Linear programming,

Heuristic methods

IDENTIFIERS: Hellerman raricks algorithm,

WUAFOSR2304A3, PE61102F (U)

AD A129 359

UNCLASSIFIED

PAGE

94

AD A129 344

UNCLASSIFIED

EVN35A



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 343 4/2

CENTRAL CONNECTICUT STATE COLL NEW BRITAIN

An Investigation Into the Nature of  
Snowflake Aggregation in the Vicinity of the  
Melting Layer in Stratiform Clouds.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAR 83 31P Newman, Steven B. ;

CONTRACT: AFOSR 82 0173

PROD: 2310

TASK: D9

MONITOR: AFOSR TR-83-0438

UNCLASSIFIED REPORT

ABSTRACT: Data from AFGL research flights were analyzed to determine the size spectra of snowflakes vs. temperature at levels just above the melting layer in stratiform clouds. Percentages of particles in various size ranges reveal a pattern of apparent snowflake aggregation and breakup which compare well with the mechanism proposed by Lo and Passarelli (1982). In addition, a model of snowflake aggregation and breakup has been developed and run for various cloud parameters such as collection efficiency and cloud ice contents. The results of this analysis predict snowflake breakup temperatures quite close to those observed from the AFGL data. (Author)

(U)

DESCRIPTORS: \*Snow, Stratus clouds, Ice, Crystals, Particles, Accumulation, Particle size, Concentration(Composition), Atmospheric temperature, Statistical analysis, Fragmentation  
IDENTIFIERS: \*Snowflakes, Aggregation,  
WUAFOSR2310D9, PE61102F

(U)

(U)

AD A129 343

UNCLASSIFIED

PAGE

95

AD-A129 338

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 338 7/4 20/10

PRINCETON UNIV NJ DEPT OF CHEMISTRY

Studies in Non Equilibrium Statistical  
Mechanics.

(U)

DESCRIPTIVE NOTE: Final technical rept. 30 Sep 78-29

Sep 82,

SEP 82 19P

Rabitz, Herschel ;

CONTRACT: AFOSR-78-3724

PROD: 2303

TASK: B1

MONITOR: AFOSR TR-83-0467

UNCLASSIFIED REPORT

ABSTRACT: The research accomplished under the stated contract is summarized with work performed in the following primary areas: Stochastic dynamics; Sensitivity analysis; Collisional scaling theories; and Quantum collision dynamics. (Author)

(U)

DESCRIPTORS: \*Gas dynamics, \*Particle collisions, \*Statistical mechanics, Stochastic processes, Theory, Molecular energy levels, Energy transfer, Kinetics, Sensitivity, Molecular vibration, Relaxation, Greens function, Mathematical models, Scaling factors

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2303B1

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 323 20/6 14/2

HONEYWELL ELECTRO OPTICS DIV LEXINGTON MA

Use of Holographic Linear Fringe  
Linearization Interferometry (FLI) for  
Detection of Defects.

(U)

DESCRIPTIVE NOTE: Annual rept. 15 Jan 82-15 Jan 83,  
APR 83 73P Reynolds, George O.; Servaes,  
Donald A.; DeVelis, John G.; Mayville, Ronald

A. ;

REPT. NO. 8303-22

CONTRACT: F49620-82-C-0001

PROJ: 2306

TASK: A2

MONITOR: AFOSR TR-83-0464

## UNCLASSIFIED REPORT

ABSTRACT: This report describes the progress during Phase I on the two step Holographic Fringe Linearization Interferometry (FLI) Study. The FLI process consists of deflecting the object beam between holographic exposures to create linear fringes and spatially filtering of the fringe reconstructed from the hologram to discriminate between subsurface defects and random fringe noise. The fringe localization procedures utilized to put the linear fringes on the surface of interest are described. The design of the repeatable thermal information procedures used in the preliminary experiments are discussed. The design of both the holographic recording, reconstruction and spatial filtering systems are given. Preliminary experimental results show the separation of linear fringe information and random noise in the Fourier plane of the spatial filtering system. Various filter designs which enhance the images are also discussed. System feasibility is demonstrated for a triple exposure experiment in which controlled noise was added with a third exposure. Controlled loading experiments are shown to agree with the results predicted analytically with a simple bending finite element model. Plans for the work in Phase II are presented. (Author)

(U)

DESCRIPTORS: \*Holography, \*Linear systems, \*Interferometers, \*Detection, Defects (Materials), Deformation, Thermal analysis, Holograms, Spatial filtering, Record  
IDENTIFIERS: Linearization interferometry.

(U)

AD-A129 323

UNCLASSIFIED

PAGE

96

AD-A129 322

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 322 12/1

ILLINOIS UNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS

A Collection of A-Optimal Designs for  
Control-Test Treatment Comparisons. I.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 36P Hedayat, A. S.; Majumdar, D.

CONTRACT: AFOSR-80-0170

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0462

## UNCLASSIFIED REPORT

ABSTRACT: A-optimal designs for comparing  $v$  test treatments with a control in  $b$  blocks of size  $k$  each are considered. 111 such designs are given when the parameters are in the range:  $2 < \text{or} = k < \text{or} = 8$ ,  $k < \text{or} = v < \text{or} = 30$ ,  $v < \text{or} = b < \text{or} = 50$ . (Author)

DESCRIPTORS: \*Control theory, Optimization, Computer aided design, Computer applications, Comparison, Mathematical models, Collection  
IDENTIFIERS: Block design, WUAFOSR2304A5, PLB1102F

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 320 20/9 20/14 4/1

COLORADO UNIV AT BOULDER DEPT OF ASTRO-GEOPHYSICS

Plasma Wave Turbulence and Particle Heating  
Caused by Electron Beams, Radiation, and  
Pinches.

(U)

DESCRIPTIVE NOTE: Annual interim rept. 1 Oct 81-30 Sep  
82.

82, JAN 83 276P Goldman, Martin V. ;

REPT. NO. CU-153201

CONTRACT: AFOSR-80-0022

PROJ: 2301

TASK: A8

MONITOR: AFOSR TR-83-0498

UNCLASSIFIED REPORT

ABSTRACT: This report covers research performed from 1 Oct 81 through 30 Sep 82 on electron beam excited plasma turbulence and electromagnetic emission, on propagation of intense electromagnetic radiation in the earth's ionosphere, and on laboratory experiments on particle beams and plasma waves. (Author)

(U)

DESCRIPTORS: \*Plasmas(Physics), \*Plasma waves, \*Ionospheric disturbances, Air Force research, Particle beams, Electron beams, Electromagnetic radiation, Electromagnetic wave propagation, Pinch effect, Excitation, Turbulence, Ion exchange, Cyclotron waves, Ionospheric modification, Backscattering, Steady state

(U)

IDENTIFIERS: Plasma wave turbulence, PE61101F,

WUAFOSR2301A8

(U)

AD-A129 320

UNCLASSIFIED

PAGE

97

AD-A129 313

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 313 11/4 20/11 12/1

DREXEL UNIV PHILADELPHIA PA DEPT OF MECHANICAL ENGINEERING AND MECHANICS

Fracture Mechanics of Transverse Cracks and  
Edge Delamination in Graphite-Epoxy  
Composite Laminates.

(U)

DESCRIPTIVE NOTE: Final technical rept. 1 Sep 79-30

Sep 81,

MAR 82 167P Wang, A. S. D. ; Crossman,

Frank W. ;

CONTRACT: F49620-79-C-0206

PROJ: 2307

TASK: B2

MONITOR: AFOSR TR-83-0452

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Lockheed Missiles and Space Co., Inc., Palo Alto, CA. Palo Alto Research Lab.

ABSTRACT: The fracture mechanics of matrix-dominated cracks--multiple transverse cracks and edge delamination--has been presented in this report. Analytical models are developed which describe the initiation, growth and the growth stability of these two types of cracking mechanisms. A finite element crack-closure method is used to simulate the crack growth numerically; and an extensive experimental case study is conducted to correlate with the analytical models. (Author)

(U)

DESCRIPTORS: \*Composite materials, \*Epoxy laminates, \*Graphited materials, \*Cracks, \*Crack propagation, \*Finite element analysis, Mathematical models, Cracking(Fracturing), Fracture(Mechanics), Stability, Transverse, Numerical analysis, Mathematical prediction, Thickness, Failure(Mechanics), Matrix materials, Fibers, Microstructure, Defects(Materials), Unidirectional, Edges, Mechanical properties, Stress strain relations

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2307B2

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 296

BROWN UNIV PROVIDENCE RI LEFSCHEZ CENTER FOR DYNAMICAL SYSTEMS

Optimal Control of Markov Processes.

(5)

MAR 83 27P Fleming, Wendell H. ;

REPT. NO. LCDS 83-4

CONTRACT: AFDSR-81-0116

PROJ: 2304

**TASK: A4**

UNCLASSIFIED REPORT

**ABSTRACT:** The purpose of this article is to give an overview of some recent developments in optimal stochastic control theory. Broadly speaking, stochastic control theory deals with models of systems whose evolution is affected both by certain random influences and also by certain inputs chosen by a controller. The authors are concerned here only with state-space formulations of control problems in continuous time. Moreover, the authors consider only Markovian control problems in which the state  $x$  and  $t$  of the process being controlled is Markov provided the controller follows a Markov control policy. They mainly discuss the case of continuously acting control, in which at each time  $t$  a control  $u$  and  $t$  is applied to the system.

Solutions(General), Dynamic programming,  
Transformations(Mathematics),  
Operators(Mathematics), Adaptive control system  
IDENTIFIERS: WJAF0SR2304A4, PEG1102F

AD-A129 295

UNCLASSIFIED

EVN3A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 293 12/1 14/2 17/7 9/2 8/6

TEXAS A AND M UNIV COLLEGE STATION DEPT OF ELECTRICAL ENGINEERING

Efficient Computation for Large Scale Optimization.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jun-31 Aug 82,  
 NOV 82 67P Fleming, John A. ;  
 CONTRACT: AFOSR-82-0212  
 PROJ: 2304  
 TASK: D9  
 MONITOR: AFOSR TR-83-0445

## UNCLASSIFIED REPORT

ABSTRACT: Several classes of algorithms for solution of the general nonlinear programming (constrained optimization) problem, and four specific implementations of these were chosen and evaluated with respect to expected speed of computation. A test problem based on the path generation problem of terrain following/terrain avoidance flight was developed, and the performance of the chosen optimization procedures was compared. It was found that the generalized reduced gradient method was faster and more reliable than either of two augmented Lagrangian methods and a quadratic approximation method. However, the solution time for the TF/TA type problems was found to be far in excess of what would be required. Several simplifications of the problem statement were attempted in order to decrease computation time without compromising the integrity of the solution.

DESCRIPTORS: \*Algorithms, \*Nonlinear programming, \*Problem solving, \*Flight simulation, \*Terrain models, \*Terrain following, \*Terrain avoidance, \*Computations, \*Efficiency, \*Optimization, \*Lagrangian functions, \*Interpolation, \*Computer programs, \*Paths, \*Gradients, \*Approximation (Mathematics)

(U)

AD-A129 293

UNCLASSIFIED

PAGE

99

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 292 11/6 11/3

SRI INTERNATIONAL MENLO PARK CA

Dip Process Thermal-Barrier Coatings for Superalloys.

(U)

DESCRIPTIVE NOTE: Final technical rept. 15 Dec 80-14 Jan 83.

MAR 83 36P Allam, Ibrahim M. ; Rowcliffe, David J. ;  
 REPT. NO. SRI-2509  
 CONTRACT: F49620-81-K-0009  
 PROJ: 2306  
 TASK: A2  
 MONITOR: AFOSR TR-83-0441

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Jun 80, AD-A088 064.

ABSTRACT: A new concept of growing a ceramic-based thermal barrier coating on gas turbine alloys was investigated. This process involves hot dipping alloy substrates in low-melting cerium-nickel or zirconium-nickel eutectics. Cerium oxide (CeO<sub>2</sub>) or zirconium oxide (ZrO<sub>2</sub>) were then grown by selective oxidation to form an external thermal barrier layer above an inner composite (CeO<sub>2</sub> or ZrO<sub>2</sub>/substrate alloy) layer. The microstructure and chemical composition of the thermal barriers were studied as a function of composition of melts and substrates, dipping temperature and oxidation conditions. This evaluation has led to a good understanding of the factors that control the formation of desirable coatings and to the specification of the conditions to produce them. An important advantage of ZrO<sub>2</sub>-based coatings over CeO<sub>2</sub>-based coatings produced by this technique is that ZrO<sub>2</sub> grows totally as an overlay layer with little or no influence of elements from the substrate. In contrast, CeO<sub>2</sub>-based coatings grow completely within the surface zone of the coated substrate, and thus their properties can be affected by substrate constituents. The results of this program suggest that the dip process could be an important alternative approach to plasma spraying for producing thermal barrier coatings on superalloys.

DESCRIPTORS: \*Superalloys, \*Barrier coatings, \*Processing, \*Dip coating, \*Thermal insulation, \*IDENTIFIERS: Thermal barriers, Molten bath.

(U)

(U)

(U)

AD-A129 292

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 291 20/6 14/5 9/2

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES IMAGE PROCESSING INST

Nonlinear Real Time Optical Signal Processing.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 15 Apr 81-14

Apr 82.

CONTRACT: AFOSR-81-0082

REPT. NO. USCPI-1080

PROJ. 2301

TASKS: D9

MONITOR: AFOSR TR-83-0500

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. USCPI-1020, AD A105 185.

ABSTRACT: The results of a one year research program in nonlinear real-time optical signal processing are described. The goal of the program was to extend fast parallel nonlinear operations to optical processing systems with large time bandwidth product. The research has concentrated on optical mode (VGM) liquid crystal real time spatial light modulators. Parallel and twisted nematic liquid crystal light valve (LCLV) devices have been used as a nonlinear element in a feedback arrangement in the sequential logic systems. A computer generated hologram fabricated on an element serves as a beam steering interconnection element. A completely optical oscillator and frequency divider have been experimentally demonstrated. Research has continued on variable-gating mode (VGM) liquid crystal devices that perform local spatial frequency modulation as a function of the incident intensity. These devices can be used for nonlinear processing by selection and combination of these spatial frequency components. These devices have many interesting physical effects with useful applications in both analog and digital optical signal processing. Preliminary theoretical modeling work to explain these effects is given, and an improved implementation of the intensity level slice function with VGM devices has been demonstrated.

DESCRIPTORS: \*Optical processing, \*Signal processing

AD A129 291

UNCLASSIFIED

PAGE

100

AD-A129 290

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 290 11 13/3

CALIFORNIA INST OF TECH PASADENA SEISMOLOGICAL LAB

Evidence of Tectonic Release from Underground Nuclear Explosions in Long Period P Waves.

(U)

DESCRIPTIVE NOTE: Technical rept.,

AUG 82 23P Wallace, Terry C. ;

Helmlinger, Donald V. ; Engen, Gladys R. ;

CONTRACT: F49620-81-C-0008

MONITOR: AFOSR TR-83-0495

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Bull. of the Seismological Society of America, v73 n2 p593-613 Apr 83. Reprint: Evidence of Tectonic Release from Underground Nuclear Explosions in Long Period P Waves.

DESCRIPTORS: \*Tectonics, \*Underground explosions, \*Primary waves (Seismic waves), Nuclear explosion testing, Waveforms, Comparison, Seismic data, Earthquakes, Earth mantle, Reprints

(U)  
(U)

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 289 14/2 20/1 20/12

RENSELAEER POLYTECHNIC INST TROY NY DEPT OF ELECTRICAL  
COMPUTER AND SYSTEMS ENGINEERINGProfiling the Implanted Region in Si Using  
Nondestructive Transverse Acoustoelectric  
Voltage versus Voltage Technique.

(U)

DESCRIPTIVE NOTE: Technical rept., Davari, B.; Das, P.;  
82 8P

CONTRACT: AFOSR-82-0281

PROJ: 2306

TASK: B2

MONITOR: AFOSR TR-83-0472

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Ultrasonics Symposium,  
p379-384 1982.Reprint: Profiling the Implanted Region in Si  
Using Nondestructive Transverse Acoustoelectric  
Voltage versus Voltage Technique.DESCRIPTORS: \*Nondestructive testing, \*Ultrasonic  
tests, \*Silicon, \*Semiconductors, \*Ion  
implantation, \*Chemicals, \*Vapor deposition,  
\*Acoustooptics, \*Measurement, \*Voltage, \*Electrical  
conductivity, \*Transverse, \*Symposia, \*Reprints  
IDENTIFIERS: PE61102F, WUAFOSR2306B2

(U)

(U)

IAC NO.: NT-027668

IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

IAC SUBJECT TERMS: N--SEMICONDUCTORS, ACOUSTOELECTRIC  
VOLTAGE, DELAY LINES, MONITORING, CONDUCTIVITY, ANALYSIS,  
PROFILES, SURFACE WAVES, ACOUSTIC WAVES, ION IMPLANTATION,  
IN SITU, FORMULAS(MATHEMATICS);

AD A129 289

UNCLASSIFIED

PAGE

101

AD-A129 288

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 288 12/1 14/2 1/3

KENTUCKY UNIV LEXINGTON DEPT OF ELECTRICAL  
ENGINEERINGSynthesis of Optimal Digital Controller for  
Continuous-Data Model-Following.

(U)

DESCRIPTIVE NOTE: Final rept. 1 May-31 Aug 82,  
JAN 83 88P Yeh,Hsi-Han ;

CONTRACT: AFOSR-82-0207

PROJ: 2304

TASK: D9

MONITOR: AFOSR TR-83-0461

## UNCLASSIFIED REPORT

ABSTRACT: The digitalization of flight control  
systems has been of increasing interest to the Air  
Force. One of the problems confronting the  
designer is the real-time implementation of advanced  
control algorithms within the computational  
capability of the on-board computer. In converting  
a continuous-data (analog) controller into a digital  
controller, ad hoc approaches such as bilinear  
transform and prewarped Tustin transform techniques  
have typically been used. These methods have the  
advantage of being straightforward and easy to use,  
and they are intuitively appealing. But the  
performance of a system digitalized by these  
approaches resembles the performance of the baseline  
(continuous) system only when the sampling frequency  
is relatively high, because the dynamics of the plant  
and the feedback structure of the system are not  
taken into consideration.

(U)

DESCRIPTORS: \*Algorithms, \*Mathematical models,  
\*Control systems, \*Digital systems, Analog to  
digital converters, Flight control systems,  
Computations, Air Force planning, Optimization,  
Onboard, Transformations(Mathematics), Transfer  
functions, Equations

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304D9

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 264 12/1

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

Stability in Linear Delay Equations. (U)

DESCRIPTIVE NOTE: Technical rept.,  
 AUG 82 36P Hale, Jack K. ; Infante,  
 Etторе P. ; Tsen, Fu-Shiang Peter ;  
 REPT. NO. LCDS-82-23  
 CONTRACT: AFOSR-81-0198  
 PROJ: 2304  
 TASK: A4  
 MONITOR: AFOSR TR-83-0482

## UNCLASSIFIED REPORT

ABSTRACT: For linear autonomous differential  
 difference equations of retarded or neutral type,  
 necessary and sufficient conditions are given for the  
 zero solution to stable (hyperbolic) for all values  
 of the delays. (Author) (U)

DESCRIPTORS: \*Linear differential equations,  
 \*Difference equations, \*Stability,  
 Solutions(General), Value, Delay,  
 Coefficients, Asymptotic normality, Hyperbolas  
 IDENTIFIERS: Retarded equations, Neutral  
 equations, WUAFOSR2304A4, PE61102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 263 12/1 20/1

DELAWARE UNIV NEWARK DEPT OF MATHEMATICAL SCIENCES

The Unique Solvability of the Null Field  
 Equations of Acoustics. (U)

DESCRIPTIVE NOTE: Technical rept.,  
 OCT 81 10P Colton, David ; Kress, Rainer ;  
 CONTRACT: AFOSR-81-0103  
 PROJ: 2304  
 TASK: A4  
 MONITOR: AFOSR TR-83-0476

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Quarterly Jnl. of  
 Mechanics and Applied Mathematics, v36 pt1 p87-95  
 1983.  
 Reprint: The Unique Solvability of the Null  
 Field Equations of Acoustics.

DESCRIPTORS: \*Boundary value problems, \*Integral  
 equations, \*Acoustic waves, Problem solving,  
 Acoustic scattering, Reprints (U)  
 IDENTIFIERS: Null field equations,  
 WUAFOSR2304A4, PE61102F (U)



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 262 12/1 14/2

WRIGHT STATE UNIV DAYTON OH DEPT OF MATHEMATICS AND STATISTICS

Multivariable Linear Digital Control via State Space Output Matching.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 JAN 83 30P Miller, David F.;  
 CONTRACT: AFOSR-82-0208  
 PROJ: 2304  
 TASK: A6  
 MONITOR: AFOSR TR-83-0487

## UNCLASSIFIED REPORT

ABSTRACT: A direct state space approach to the digital control of multivariable linear systems is presented. Control is provided by minimizing the mean square error between controlled plant outputs and specified desired output trajectories at sampling instants. Linear equations for digital control inputs are solved in constant forward and feedback gain form. Numerical applications to problems in simple model following, digital redesign, and direct digital design are given. (Author)

DESCRIPTORS: Numerical methods and procedures; Control systems; Digital systems; Multivariate analysis; Linear systems; Difference equations; Feedback; Mathematical models; Input output processing; Optimization; Trajectories; Flight control systems

IDENTIFIERS: WUAFOSR2304A6, PE61102F

(U)  
(U)

AD A129 262

UNCLASSIFIED

PAGE

103

AD-A129 261

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 261 17/2 20/6

TEXAS A AND M UNIV COLLEGE STATION DEPT OF ELECTRICAL ENGINEERING

(U)

Interim Report for CY 1982.

DESCRIPTIVE NOTE: Rept. for 1 Jan-31 Dec 82,  
 FEB 83 12P Halverson, Don R.;  
 CONTRACT: AFOSR-82-0033  
 PROJ: 2304  
 TASK: A5  
 MONITOR: AFOSR TR-83-0480

## UNCLASSIFIED REPORT

ABSTRACT: A number of results were obtained pertaining to signal detection and block truncation coding for image compression. These results led to improved performance over previous approaches, with special attention given to methods which required less statistical knowledge and which were easier to implement. In particular, use of robustness techniques was employed to allow the exploitation of whatever knowledge was available, while retaining insensitivity to the remaining inexactness in knowledge. (Author)

DESCRIPTORS: Algorithms; Signal processing; Image processing; Time signals; Coding; Statistical processes; Signal to noise ratio; Methodology; Matched filters

IDENTIFIERS: Robust procedures; Image compression; Block truncation coding; PE61102F.

WUAFOSR2304A5

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 251 17/2 12/1

VIRGINIA UNIV CHARLOTTESVILLE DEPT OF ELECTRICAL  
ENGINEERINGLimited Sensing Random Multiple Access  
Using Binary Feedback.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JAN 83 47P Merakos, Lazaros ; Kazakos,

Demetriou ;

REPT. NO. UVA/525634/EE83/109

CONTRACT: AFOSR-82-0030

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0493

UNCLASSIFIED REPORT

ABSTRACT: The authors consider the random-accessing problem of a single, collision-type, slotted, packet-switched communication channel by a large number of independent, data transmitting bursty users. They propose and analyze an easy-to-implement algorithm under the realistic assumption that each user inspects the channel outcome feedback only whenever he is blocked. Assumed is binary feedback which informs the users only about whether or not there was a collision in the previous slot. It is shown that the algorithm results in finite average delays for transmission at rates less than 0.05 packets per channel slot, and an exact upper bound for the average delay is given. (Author)

DESCRIPTORS: \*Communications controls, \*Algorithms, \*Multiple access, \*Data transmission systems, Delay, User needs, Sharing, Channels,

Feedback, Slots, Collisions, Monitoring

IDENTIFIERS: Packet communications, Packet switching, Limited sensing random access algorithm,

Recursive equations, WUAFOSR2304A5,

PE61102F

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 248 20/9 7/5

PRINCETON UNIV NJ

Spatial Dependence of the Strong Optogalvanic  
Effects Due to Metastable Quenching in a DC  
Helium Discharge.

(U)

MAR 82 7P Tam, Andrew C. ;

CONTRACT: AFOSR-81-0104

PROJ: 2301

TASK: A4

MONITOR: AFOSR TR-83-0496

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Plasma Science, VPS-10 n4 p252-256 Dec 82. Prepared in cooperation with Columbia Radiation Lab., New York.

Reprint: Spatial Dependence of the Strong Optogalvanic Effects Due to Metastable Quenching in a DC Helium Discharge.

DESCRIPTORS: \*Gas discharges, \*Illumination, \*Metastable state, Helium, Electric current, Electron density, Irradiation, Resonance absorption, Quenching, Reprints

IDENTIFIERS: Optogalvanics, PE61102F,

WUAFOSR2301A4

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 247

47

PENNSYLVANIA STATE UNIV INTL UNIV ARK DEPT OF  
METEOROLGY

Analysis and Prediction of Severe Storm  
Environment.

(U)

DESCRIPTIVE NOTE: Final report.

FEB 83 17P Carlson, Toby N.; Warner,  
Thomas T. FRITZ, M. David J. ;

CONTRACT: AFOSR-79-0125

PROJ: 2310

TASK: A

MONITOR: AFOSR TR 83-0440

UNCLASSIFIED R ORT

ABSTRACT: The most significant aspect of this research regards the role of differential surface heating and topography in the development of mesoscale weather. Research has progressed in four areas: conceptual development, model development, model sensitivity tests, and prediction. The effect of surface heating and topography on precipitation, and lid generation are forming the basis of current and on going numerical and conceptual research. The effect of variations in soil moisture on the mesoscale environment has been identified as a most significant factor. The strength of the capping lid has been related to the likelihood and intensity of convective precipitation, especially involving the dynamics of lid edge zone. A great deal of effort was devoted to parameterization of surface heating, cloudiness, and convective precipitation. During this research effort great strides were made in the conceptual awareness of the complexity of the relationships between synoptic forcing and mesoscale development. Enormous improvements were made in parameterizing the surface boundary layer. What began as an examination of the lid mechanism with regard to severe convection broadened to explain the complex interaction of a variety of differing influences on the severe storm environment and on precipitation. (Author)

(U)

DESCRIPTORS: \*Thunderstorms, Stratification, Temperature Inversion, Atmospheric motion, Jet streams, Low altitude, Friction, Atmospheric precipitation

(U)

IDENTIFIERS: \*Severe storms, Lid effect,

(U)

PE61102F, WUAFOSR2310A1

AD A129 247

UNCLASSIFIED

PAGE

105

AD-A129 233

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 233

6/19

FLORIDA UNIV GAINESVILLE DEPT OF PHYSIOLOGICAL  
SCIENCES

Analysis of Long Bone and Vertebral Failure  
Patterns.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 20 Feb 82-19  
Feb 83,

MAR 83 27P Curell, Jo Ann C. ;

CONTRACT: AFOSR-80-0130

PROJ: 2312

TASK: A2

MONITOR: AFOSR TR-83-0459

UNCLASSIFIED REPORT

ABSTRACT: Baboons were dropped vertically from four feet above the ground. The vertebral columns were examined with light microscopy and scanning electron microscopy. Six months post-impaction, there was damage to the vertebral end plates and beginning osteoarthritis of the facet joints. Six years post-impaction, the lesions had progressed to anterior osteophyte formation and severe osteoarthritis of the facet joints. The lesions observed in this study are thought to be related to the impaction sequence. Normal anatomy of the rhesus monkey spine was also investigated.

(U)

DESCRIPTORS: \*Bones, \*Spinal column,

\*Biomechanics, Light, Patterns, Microscopy, Electron microscopy, Baboons, Lesions, Rhesus monkeys, Anatomy, Radiography, Cartilage, Joints(Anatomy), Impact tests, Disks

(U)

IDENTIFIERS: End plates, WUAFOSR2312A2,

(U)

PE61102F

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 232 67

CALIFORNIA UNIV SANTA BARBARA INST OF ENVIRONMENTAL  
STRESS

Automated Lab Blood Flow Plethysmograph.

(U)

JAN 82 6P Marcus, Richard R. ; Horvath,  
Steven M. ;  
CONTRACT: AFOSR-78-3534  
PROJ 2312  
TASK: A1  
MONITOR: AFOSR TR-83-0455

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in American Physiological  
Society, 1983.  
Reprints: Automated Limb Blood Flow  
Plethysmograph

DESCRIPTORS: \*Blood circulation, Plethysmography,  
Automation, Measurement, Computer applications,  
Digital computers, Real time, Data displays,  
Stain gages, Reprints  
AD A129 232 AFOSR2312A1, PC61102F

AD A129 232

UNCLASSIFIED

PAGE

106

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 227 20/4 1/3

STANFORD UNIV CA JOINT INST OF AERONAUTICS AND  
ACOUSTICS

On the Structure of an Underexpanded  
Rectangular Jet.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
JUL 82 5GP Krothapalli, A. ; Hsia, Y. ;  
Baganoff, D. ; Karamcheti, K. ;  
REPT. NO. JIAA-TR-47  
CONTRACT: F49620-79-C-0180  
PROJ: 2307  
TASK: A1  
MONITOR: AFOSR TR-83-0454

UNCLASSIFIED REPORT

ABSTRACT: An experimental investigation was  
carried out on an underexpanded jet of air issuing  
from a converging rectangular nozzle of moderate  
aspect ratio. Schlieren pictures of the flow field  
along with hot-wire measurements in the jet were  
obtained at different pressure ratios. At the  
pressure ratio corresponding to the maximum  
screaching sound, Schlieren photographs show a very  
strong organized cylindrical wave pattern on either  
side of the jet, with their respective sources being  
located at the end of the third shock cell.

(U)  
(U)

Associated with this wave pattern is a large  
increase in the angle of spread of the jet. It is  
shown that the self excitation helps to induce large-  
scale vortical motions in the jet both in the plane  
containing the small dimension of the nozzle and in  
the plane containing the long dimension of the  
nozzle. However, the locations of these structures  
are different in the two planes. Nevertheless, the  
characteristic Strouhal number corresponding to  
these large-scale structures in both planes is the  
same and equal to 0.12. The influence of the self  
excitation on the mean velocities and rms intensities  
was investigated. For the full range of pressure  
ratios studied, similarity was found both in the mean  
velocity and rms intensity profiles in the two  
central planes beyond 80 widths downstream of the  
nozzle exit. However, the shapes of the similarity  
profiles are different in the two planes. For the  
downstream distances studied, complete axisymmetry  
(identical mean velocity profiles in both planes) was  
not observed.

(U)  
(U)

DESCRIPTORS: \*Nozzles, \*Flow fields, \*Air flow,  
AD A129 227

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 225 5/10

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J DEPT OF  
PSYCHOLOGYEye Movements and Visual Information  
Processing. (U)DESCRIPTIVE NOTE: Interim rept. 1 Jan-31 Dec 82,  
APR 83 11P Kowler, Eileen ;

CONTRACT: AFOSR 82-0085

PROJ: 2313

TASK: A5

MONITOR: AFOSR TR 83-0458

## UNCLASSIFIED REPORT

ABSTRACT: Eye movements determine the location and velocity of the retinal image. The eye moves smoothly in the direction of expected future target motion. Experiments will determine: (1) how expectations and guesses about the direction of future motion are formulated and (2) the relative contributions of expectations and retinal image motion to smooth eye movements. Saccades continually displace the retinal image, yet we see the world as a single coherent picture. Experiments will find out whether the visual system selectively tolerates rapid lateral displacements, or whether the decision to move the eye is required. Experiments will show whether sequences of saccades can be pre-programmed, and whether use of such sequences improves performance of visual tasks. (U)

DESCRIPTORS: Eye movements, Information processing, Vision, Retina, Images, Motion, Visual signals, Moving targets, Visual perception (U)  
IDENTIFIERS: WUAFOSR2313A5, PEG1102F (U)

AD-A129 225

UNCLASSIFIED

PAGE

107

AD-A129 224

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 224 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

A Finitely Additive White Noise Approach to  
Nonlinear Filtering. (U)DESCRIPTIVE NOTE: Technical rept.,  
OCT 82 37P Kallianpur, G. ; Karandikar, R.  
L. ;

REPT. NO. TR-21

CONTRACT: F49620-82-C-0009

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR 83-0447

## UNCLASSIFIED REPORT

ABSTRACT: A finitely additive white noise approach to nonlinear filtering is developed. It is shown that a pathwise solution of the problem is possible where the observed paths belong to the reproducing kernel Hilbert space of the Wiener process. Connections with robust filtering and recent developments are explored. (Author) (U)

DESCRIPTORS: Mathematical filters, Nonlinear systems, White noise, Mathematical models, Problem solving, Bayes theorem, Stochastic processes, Paths, Hilbert space, Signal processing, Partial differential equations IDENTIFIERS: Wiener process, Nonlinear filtering, Zakai equations, WUAFOSR2304A5, PEG1102F (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 221 12/1 20/6

KANSAS UNIV FAYETTEVILLE DEPT OF ELECTRICAL  
ENGINEERING

Adaptive Hybrid Picture Coding.

(U)

DESCRIPTIVE NOTE. Final rept. 30 Sep 77-1 Oct 82.  
 FEB 83 122P Jones, Richard A.; Bowling,  
 Carl D.; Tejwani, Yogendra ;  
 CONTRACT: AFOSR-77 3456  
 PROJ: 2305  
 TASK: R3  
 MONITOR: AFOSR TR 83 0499

## UNCLASSIFIED REPORT

ABSTRACT: This report consist of two parts. In part one, a time modified autoregressive model for interferogram image coding is presented. This method is compared with previous work in the field of interferogram image coding and it is shown that substantial simplifications occur when the nearest integer displacement is taken into account. It is demonstrated that when the between frame noise is minimal and the motion is pure translation or can be modelled by translation, enough information can be extracted from the predictor coefficients to determine the non-integer displacement with small error. In part two, a new concept for examining shapes as vectors in a shape space is described. The shape space is defined in terms of its properties and the importance of the independence of the size variable to the shape vectors, defined on this shape space, is stressed. Also, two theorems helpful in the process of comparing partial shapes to the complete shape are stated and proved. A new method for detecting the points on a shape which appear to dominate visual perception is described. This method, called the Adaptive Line of Sight method detects the dominant points on a shape even though they do not always occur on points of high curvature. With this method, the critical points, or dominant points, of the shape that are determined are based on a set of coordinate axes that are dependent on the shape itself. Therefore, the points determined are independent of size, rotation, or relative displacement.

DESCRIPTORS: \*Mathematical models, \*Image processing, \*Coding, \*Shape, Vector spaces,  
 IDENTIFIERS: Autoregressive processes, Image

AD A129 221

## UNCLASSIFIED

PAGE

108

AD-A129 220

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 220 20/10 20/7 7/2

ROCHESTER UNIV NY DEPT OF CHEMISTRY

Zeeman Transitions in Collisions of Na with  
Xe,

(U)

SEP 82 5P George, Thomas F.; DeVries,  
 Paul L.;  
 CONTRACT: AFOSR-82-0046  
 PROJ: 2303  
 TASK: A2  
 MONITOR: AFOSR TR-83-0469

## UNCLASSIFIED REPORT

Reprint: Zeeman Transitions in Collisions of Na  
 with Xe.

DESCRIPTORS: \*Quantum statistics, \*Computations,  
 \*Collisions, \*Sodium, \*Xenon, Zeeman effect,  
 Atomic beams, Reprints  
 IDENTIFIERS: Zeeman transitions, Quantum  
 mechanics, Centrifical barrier resonances, Fine  
 structure transitions, WUAFOSR2303A2, PEG1102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 219 12/1

WISCONSIN UNIV-MILWAUKEE

The Occupational Statistics for  
Indistinguishable Trimmers on a 3XN Lattice  
Space.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
MAR 82 8P Hock, J. L.; Licato, P. E.  
McQuistan, R. B.;

CONTRACT: AFOSR-81-0192

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0449

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Mathematical  
Physics, v23 n11 p2185-2189 Nov 82.  
Reprint: The Occupational Statistics for  
Indistinguishable Trimmers on a 3XN Lattice Space.

DESCRIPTORS: \*Distribution functions, \*Statistics,  
Polynomials, Recursive functions, Computations,  
Value, Normalizing(Statistics), Reprints  
IDENTIFIERS: \*Occupational statistics

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 218 12/1 14/2

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL  
ENGINEERING

Spectral Analysis: Prediction and  
Extrapolation,

(U)

81 44P Childers, Donald G.; Aunon,  
Jorge I.; McGillem, Clare D.;  
CONTRACT: AFOSR-80-0152

PROJ: 2313

TASK: A4

MONITOR: AFOSR TR-83-0456

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in CRC Critical Reviews in  
Bioengineering, v6 p133-175 Sep 81.  
Reprint: Spectral Analysis: Prediction and  
Extrapolation.

DESCRIPTORS: \*Mathematical models, \*Spectrum  
analysis, Mathematical prediction, Extrapolation,  
Estimates, Potential theory, Signal processing,  
Reprints

(U)

(U)

IDENTIFIERS: Autoregressive processes,  
WUAFOSR2313A4, .PE61102F

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 217 12/1

ILLINOIS UNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS

The Family of t Designs. Part II.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JAN 78 33P Kageyama, S. ;edayat, A. S.

CONTRACT: AFOSR-80-0170, AFOSR-76-3050

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0463

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Statistical Planning and Inference, v7 p257 287 1983. See also Part I, AD-A095 946.

Reprint: The Family of t-Designs. Part II.

DESCRIPTORS: \*Factorial design, \*Statistical inference, Set theory, Combinatorial analysis, Reprints

IDENTIFIERS: \*T design, WUAFOSR2304A5, PEG1102F

(U)

(U)

AD A129 217

UNCLASSIFIED

PAGE

110

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 215 5/9 9/2

MCDONNELL DOUGLAS ELECTRONICS CO ST CHARLES MO

Advanced Training Techniques Using Computer Generated Imagery.

(U)

DESCRIPTIVE NOTE: Final technical rept. Apr 79-Feb 83, FEB 83 161P Coblitz, D. ;Verstegen, M. ;

Hauck, D. ;

REPT. NO. MDC M3027

CONTRACT: F49620-79-C-0067

PROJ: 2313

TASK: A2

MONITOR: AFOSR TR-83-0460

UNCLASSIFIED REPORT

ABSTRACT: The objectives of this study were to generate new concepts in aircrew training methods that take advantage of the flexibility of computer generated imagery, to demonstrate examples, and to perform exploratory testing of these examples. The purposes of the testing were to determine pilot acceptance of the use of a simulator as a training device as opposed to just an aircraft replicator, and to provide a baseline of information from which detailed training experiments could be designed for future testing by others. These goals were met. In general, both student and instructor pilot reactions were quite favorable. Experiments on ability to judge depression angles (e.g., for glideslope or dive angles) showed that this ability is quite poor among novice and experienced pilots alike. Methods of successfully improving these capabilities were demonstrated, but, found to be much more effective with limited experience pilot than with experienced pilots. A new form of energy/maneuverability diagram was designed and implemented on a simulator visual system. A sample syllabus for use of this diagram in aircombat training is presented. Studies of the minimal cues necessary for low level flight showed that, while the number of cues required by most pilots is quite large, the number required after appropriate training in visual cue understanding is surprisingly small.

DESCRIPTORS: \*Computer aided instruction, \*Flight training, \*Image processing, \*Flight simulation, Computerized simulation, Visual aids, Flight simulators, Pilots, Learning, Skills, Combat IDENTIFIERS: PEG1102F, WUAFOSR2313A2

(U)

(U)

(U)

AD-A129 215

UNCLASSIFIED

EVN35A



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 214 12/1

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

Weak Convergence and Asymptotic Properties of Adaptive Filters with Constant Gains.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 27P Kushner, Harold J. ; Shwartz, Adam ;

REPT. NO. LCDS-83-7

CONTRACT: N00014-76-C-0279, AFOSR-81-0116

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-33-0478

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Grant NSF-ECS82-11476.

ABSTRACT: This paper illustrates the power of weak convergence methods through the analysis of the basic algorithm of adaptive filtering. Except for the simplest cases (e.g., when  $(y \text{ sub } n, \psi \text{ sub } n)$  are mutually independent), the analysis of the algorithm for fixed epsilon is difficult. However, asymptotic analysis (epsilon approaches limit of 0) via weak convergence methods provides much information, relatively painlessly.

(U)

DESCRIPTORS: \*Algorithms, \*Adaptive filters, \*Weak convergence, \*Asymptotic normality, Gain, Interpolation, Sequences (Mathematics), Iterations, Errors, Truncation

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304A4

AD A129 214

UNCLASSIFIED

PAGE

111

AD-A129 211

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 211 20/4

RENSELAER POLYTECHNIC INST TROY NY

Note on the Axisymmetric Sonic Jet.

(U)

DESCRIPTIVE NOTE: Technical rept.,

82 9P Cole, Julian D. ;

CONTRACT: AFOSR-82-0155

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0450

## UNCLASSIFIED REPORT

ABSTRACT: The axisymmetric jet exhausting to sonic pressure is considered, for simplicity, under the assumptions of transonic small disturbance theory. It is shown that the jet reaches its final state at a finite distance from the orifice. This result for the axisymmetric jet is thus the same as that for a jet. Part of the argument used to show that the jet reaches its asymptotic state is local in the hodograph. The result should also apply to a gas dynamic flow without the restriction of small disturbance theory. In the neighborhood of its final state disturbances from parallel sonic flow are in fact small.

(U)

(U)

(U)

DESCRIPTORS: \*Sonic boom, \*Transonic flow, Jet flow, Axisymmetric, Hodographs, Gas flow

IDENTIFIERS: Axisymmetric jet, Sonic pressure, PE61102F, WUAFOSR2304A4

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 209 12/1

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

Asymptotic Behavior of Stochastic Approximation and Large Deviations.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JAN 83 35P Kushner, Harold J. ;

SEPT. NO. LCDS 83-1

CONTRACT: N00014 78 C-0279, AFOSR-81-0116

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0483

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Grant NSF-ENG77-2246.

ABSTRACT: The theory of large deviations is applied to the study of the asymptotic properties of the stochastic approximation algorithms. The method provides a useful alternative to the currently used technique of obtaining rates of convergence results.

DESCRIPTORS: Algorithms; Asymptotic normality; Stochastic processes;

Approximation (Mathematics); Interpolation;

Intervals; Convergence; Estimates

IDENTIFIERS: Stochastic approximation algorithm

Large deviations theory. PE61102F.

WUAFOSR2304A4

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 207 7/2 12/1 18/8

VIRGINIA UNIV CHARLOTTESVILLE DEPT OF CHEMISTRY

Phase-Plane and Guggenheim Methods for Treatment of Kinetic Data.

(U)

AUG 82 GP Bacon, J. Roger ; Demas, J.

N. ;

CONTRACT: AFOSR-78-3590, NSF-CHE82-06279

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0466

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Analytical Chemistry, v55 n4 p653-656 Apr 83.

Reprint: Phase-plane and Guggenheim Methods for Treatment of Kinetic Data.

DESCRIPTORS: Reaction kinetics; Exponential functions; Rates; Decay; Constants; Test and evaluation; Corrections; Base lines; Reprints

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

AD A129 209

## UNCLASSIFIED

PAGE

112

AD A129 207

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH 1ROL NO. EVN35A

AD-A129 205 7/4

MONTANA STATE UNIV BOZEMAN DEPT OF PHYSICS

Angular-Resolved Electron Emission Studies  
of Microwave Materials.

(U)

DESCRIPTIVE NOTE: Final scientific rept. 1 Jul 77-30  
Apr 82.

APR 82 22P Lapeyre, Gerald J. ;

CONTRACT: F49620-77-C-0125

PROJ: 2306

TASK: B2

MONITOR: AFOSR TR-83-0474

## UNCLASSIFIED REPORT

ABSTRACT: Experiments were performed to determine the electronic structure of III-V compound semiconductors and transition metals, for example, the cleavage surface of gallium arsenide and tungsten. The results, in addition to contributing to an understanding of these materials, formed the necessary background information for interpreting the fundamental physical and chemical properties of adatoms on the surface. Several overlayer systems were studied with emphasis being placed on Ge and GaAs (110) and oxygen on W and hydrogen on W. Theoretical modeling indicates that Ge monolayers essentially exhibit the interface states expected for the Ge/GaAs(110) heterojunction. Ultraviolet photoemission (UPS) was the method used to measure the electronic structure which included the new techniques of angular resolution and polarization dependence. Synchrotron radiation was used as the radiation source so advantages of the polarizer, continuum extending into the far ultraviolet could be employed. Several of these experimental methods used to measure and interpret UPS data were developed in the program, for example, polarization-symmetry analysis and photon energy scanning of core threshold behavior. Core threshold studies yield information on the conduction band density of states (bulk and surface) and decay processes of the core hole. Studies were performed for the shallow levels of GaAs(110), GaSe, and Pt. (Author)

DESCRIPTORS: \*Photoelectric emission, \*Surface chemistry, \*Transition metals, \*Semiconductors, Gallium arsenides, Tungsten, Chemisorption, Adatoms, Cleavage, Surfaces, Electronic state

IDENTIFIERS: PE61102F, WUAFOSR2306B2

AD-A129 205

UNCLASSIFIED

PAGE

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 204 7/2 7/4

TEXAS UNIV AT AUSTIN DEPT OF PHYSICS

High Resolution Electron Energy Loss  
Studies of Chemisorbed Species on Aluminum  
and Titanium.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Apr 80-31 Mar 83,  
83 8P Erskine, J. L. ;

CONTRACT: AFOSR-80-0154

PROJ: 2303

TASK: A2

MONITOR: AFOSR TR-83-0471

## UNCLASSIFIED REPORT

ABSTRACT: This report summarizes significant accomplishments and research progress achieved during the last three years under grant AFOSR-80-0154. The overall project objective was to apply high-resolution electron-loss-spectroscopy to the study of chemisorbed species on aluminum and titanium surfaces. Pursuant to this objective, a suitable spectrometer was constructed which incorporates the necessary sample preparation and characterization capabilities including low energy electron diffraction and Auger electron spectroscopy in addition to a state-of-the-art electron energy loss spectrometer. This instrument has been used to study several chemisorbed systems including oxygen on aluminum, oxygen on nickel and hydrogen on tungsten. The primary scientific results of this program to date have been published and have been described in the four interim reports to AFOSR. Significant results include: electron energy loss studies of oxygen on aluminum which establish the simultaneous formation of overlayer and underlayer oxygen during initial oxidation, demonstration of the applicability of lattice-dynamical modeling to interpretation of energy loss data in order to test structural models, and observation of the first azimuthal pattern for impact scattering in electron energy loss studies of hydrogen on tungsten.

DESCRIPTORS: \*Aluminum, \*Titanium, \*Chemisorption, \*Electron spectroscopy, Surface chemistry, Surface analysis, Oxidation, Electron scattering, High resolution, Auger electron spectroscopy, Vibrational spectra, Energy levels, Electron diffraction

IDENTIFIERS: EELS(Electron Energy Loss Spectroscopy), PE61102F, WUAFOSR2303

AD-A129 204

UNCLASSIFIED

113

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 203 4/2 17/9

ALASKA UNIV FAIRBANKS GEOPHYSICAL INST

Investigation of Shear Induced Turbulence by  
MST (Mesosphere Stratosphere Troposphere  
Radar).

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 80-30 Sep 82,  
SEP 82 32P Remick, Gerald J. ;Jayaweera,  
Kulfi Smith, Steven A. ;  
CONTRACT: AFOSR-80-0286  
PROJ: 231C  
TASK: A1  
MONITOR: AFOSR TR-83-0437

## UNCLASSIFIED REPORT

ABSTRACT: Wind speed and C sub N squared  
measurements made with the Poker Flat, Alaska  
MST radar are used to study the development of  
clear air turbulence (CAT) near the tropopause.  
Arguments and observations that indicate C sub N  
squared is proportional to the intensity of  
turbulence are presented. The relationship between  
wind shear and turbulence is examined using time-  
lagged cross correlations of measured shears and C  
sub N squared time series. From analysis of data  
taken with spatial resolutions of 2200 m and 750 m,  
it is found that the correlation improves as the time  
and spatial resolutions of the measurements improve.  
The implications for forecasting CAT are  
discussed, based on the correlation results and a  
comparison of radar data with National Weather  
Service CAT forecasts. (Author)

(U)

DESCRIPTORS: \*Meteorological radar, \*Clear air  
turbulence, Troposphere, Stratosphere, Weather  
forecasting, Wind velocity, Cross correlation  
IDENTIFIERS: MST(Mesosphere Stratosphere  
Troposphere), Wind shear, PEG1102F,  
WUAFOSR2310A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 202 12/1

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA DEPT  
OF SYSTEMS ENGINEERING

Some Generalizations of Median Filters. (U)

DESCRIPTIVE NOTE: Technical rept.,  
82 5P Lee, Yong Hoon ;Kassam,  
Saleem A. ;  
CONTRACT: AFOSR-82-0022  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0481

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE International  
Conference on Acoustics, Speech and Signal  
Processing, April 14-16 1983, Boston, MA,  
Proceedings p1-4.  
Reprint: Some Generalizations of Median Filters.

DESCRIPTORS: \*Mathematical filters, \*Algorithms,  
Signal processing, Simulation, Reprints  
IDENTIFIERS: Median filters,  
Smoothing(Mathematics), Noisy data,  
PEG1102F, WUAFOSR2304A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 192 7/3

HUL - UNIV (ENGLAND) DEPT OF CHEMISTRY

Archonius Parameters of Elementary Reactions  
Involved in the Oxidation of Neopentane.

(U)

CUL 81 15P Baldwin, Robert R. ; Hincham,  
Mohamed W. M. ; Walker, Raymond W. ;

CONTRACT: AFOSR-77-3215

PAGE: 2308

TASK: B2

MONITOR: AFOSR TR 83-0439

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES: Pub. in Jnl. of the Chemical  
Society, Faraday Transactions 1, V78 p1615-1627  
1982Contains Archonius Parameters of Elementary  
Reactions Involved in the Oxidation of  
Neopentane.DESCRIPTORS: \*Pentanes, \*Oxidation, \*Reaction  
Kinetics, High Temperature, Radicals, Acetones,  
Radicals, Reagents, Catalysts, Formaldehyde, Constants,  
Rates, Reprints

(U)

IDENTIFIERS: Neopentane, Archonius parameters,  
Neopentylhydroperoxide, Rate constants,  
Neopentyl radicals, PE61102F,

WUAFOSR2308B2

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 166 20/5 9/2

STANFORD UNIV CA STANFORD ELECTRONICS LABS

Optical Computing Research.

(U)

DESCRIPTIVE NOTE: Annual rept. 1 Jan 82-31 Jan 83,  
MAR 83 57F Goodman, Joseph ; Hesselink,  
Lambertus ; Cao, Qizhi ; Kostuk, Raymond ; Ochoa,  
Ellen ;

CONTRACT: AFOSR-82-0089

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0494

MONITOR: AFOSR TR-83-0494

## UNCLASSIFIED REPORT

ABSTRACT: The work covers several different areas  
of optical computing, as well as some work on digital  
processing of optically obtained images. The  
primary emphasis of the work is on the possible  
applications of optics to interconnections in  
integrated circuit technology. Other areas of  
effort include the diagonalization and inversion of  
circulant matrices using coherent optics, the  
division of complex wavefronts using four-wave  
mixing, and the suppression of speckle in coherently  
formed images. Applications during the last year  
arising out of work supported by the grant are also  
detailed.

(U)

DESCRIPTORS: \*Optical analysis, \*Data processing,  
\*Optical processing, \*Optical data, \*Computations,  
Signal processing, Iterations, Image processing,  
Linear algebraic equations, Digital systems,  
Simultaneous equations, Matrices(Mathematics),  
Processing, Incoherence, Integrated circuits,  
Coherence, Work, Suppression, Fiber optics,  
Specular reflection, Optical properties,  
Eigenvalues, Optics, Limitations

(U)

IDENTIFIERS: Speckle suppression, Circulant  
matrices, Optical computing, Inversions(Matrix),  
Four wave mixing, Diagonalization,  
Matrices(Optics), PE61102F,  
WUAFOSR2305B1

(U)

UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 163 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

Prediction and Power Transformations When the  
Choice of Power is Restricted to a Finite  
Set. (U)

DESCRIPTIVE NOTE: Technical rept.,  
82 9P Carroll, Raymond J. ;  
CONTRACT: AFOSR 80-0080  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0473

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American  
Statistical Association, v77 n380 p908-915 Dec  
82.  
Reprint: Prediction and Power Transformations When  
the Choice of Power is Restricted to a Finite  
Set.

DESCRIPTORS: \*Transformations(Mathematics),  
Mathematical prediction, Finite element analysis,  
Maximum likelihood estimation, Set theory, Linear  
regression analysis, Parameters, Asymptotic series,  
Reprints (U)  
IDENTIFIERS: PE61102F, WUAFOSR2304A5 (U)

UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A129 162 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

A Comparison between Maximum Likelihood and  
Generalized Least Squares in a  
Heteroscedastic Linear Model. (U)

DESCRIPTIVE NOTE: Technical rept.,  
82 7P Carroll, R. J. ; Ruppert,  
David ;  
CONTRACT: AFOSR-80-0080  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0475

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American  
Statistical Association, v77 n380 p878-882 Dec  
82.  
Reprint: A Comparison between Maximum Likelihood and  
Generalized Least Squares in a Heteroscedastic  
Linear Model.

DESCRIPTORS: \*Mathematical models, \*Maximum  
likelihood estimation, \*Least squares method,  
Comparison, Linearity, Linear regression analysis,  
Parameters, Reprints (U)  
IDENTIFIERS: Heteroscedasticity, Linear models,  
PE61102F, WUAFOSR2304A5 (U)



UNCLASSIFIED

UNCLASSIFIED

AD A129 117 7/4

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CHEMISTRY

AD A129 117 7/4

Electric Dipole Moments of Excited

Vibrational Levels in the X1A1 State of Formaldehyde By Stimulated Emission Spectroscopy.

SLP 82 7P Vaccaro, Patrick H., Kinsey,

James L.; Field, Robert W., Dai, Hai-Lung;

CONTRACT: AFOSR 80-0254

PROJ: 2303

TASK: 81

MONITOR: AFOSR TR 33 0370

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sub. in Jnl. of Chemical Physics, v78 part 2 no p3659-3664, 15 Mar 83. Reprint: Electric Dipole Moments of Excited Vibrational Levels in the X1A1 State of Formaldehyde by Stimulated Emission Spectroscopy.

DISCUSSION: Dipole moments, formaldehyde, vibrational spectra, stimulated spectroscopy, measurement, carbon, oxygen, chemical bonds, excitation, energy levels, electric fields, reprints

IDENTIFIERS: Stimulated Emission Pumping), PEG1102F, WJAFOSR2303B1

AD A129 117 7/4

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

AD A129 117 7/4

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CHEMISTRY

Electric Dipole Moments of Excited

Vibrational Levels in the X1A1 State of Formaldehyde By Stimulated Emission Spectroscopy.

SLP 82 7P Vaccaro, Patrick H., Kinsey,

James L.; Field, Robert W., Dai, Hai-Lung;

CONTRACT: AFOSR 80-0254

PROJ: 2303

TASK: 81

MONITOR: AFOSR TR 33 0370

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sub. in Jnl. of Chemical Physics, v78 part 2 no p3659-3664, 15 Mar 83. Reprint: Electric Dipole Moments of Excited Vibrational Levels in the X1A1 State of Formaldehyde by Stimulated Emission Spectroscopy.

DISCUSSION: Dipole moments, formaldehyde, vibrational spectra, stimulated spectroscopy, measurement, carbon, oxygen, chemical bonds, excitation, energy levels, electric fields, reprints

IDENTIFIERS: Stimulated Emission Pumping), PEG1102F, WJAFOSR2303B1

AD A129 117 7/4

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED



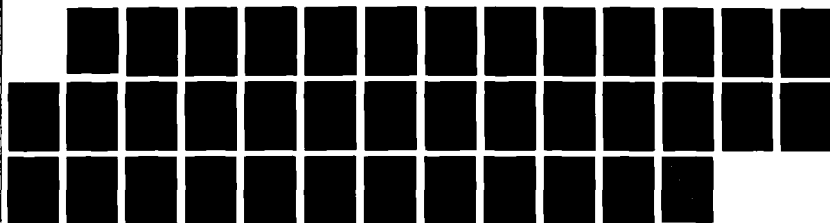
NO. 1214-222

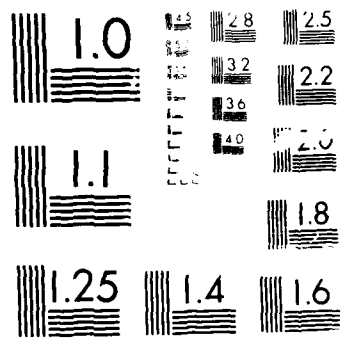
AFOSR AIR FORCE OFFICE OF SCIENTIFIC RESEARCH  
TECHNICAL REPORT SUMMARY. (U) AIR FORCE OFFICE OF  
SCIENTIFIC RESEARCH DOLLING AFB DC 8 MERT SEP 83  
AFOSR-TR-83-1314

UNCLASSIFIED

F/O 3/2

NL





## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 144 12/1 20/4

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

An Example of Boundary Layer in Delay Equations

(U)

DESCRIPTIVE NOTE: Technical rept.,

83 8P Hannsgen, Kenneth B. ;  
Herdman, Terry L. ; Stech, Harlan W. ; Wheeler,  
Robert L. ;

CONTRACT: AFOSR-76-3092

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0490

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Volterra and Functional  
Differential, p45-49 1982.  
Reprint: An Example of Boundary Layer in Delay  
Equations.DESCRIPTORS: \*Boundary layer, \*Perturbations,  
\*Differential equations, Convergence, Reprints  
IDENTIFIERS: \*Delay equations, PL61102F,  
WUAFOSR2304A4

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 137 5/1 14/5 20/6

RHODE ISLAND UNIV KINGSTON

1982 Gordon Research Conference on Holography  
and Optical Information Processing.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 82 22P Cruickshank, Alexander M. ;  
CONTRACT: AFOSR-82-0257

PROJ: 2305

TASK: B1

MONITOR: AFOSR TR-83-0223

## UNCLASSIFIED REPORT

ABSTRACT: Document includes a schedule of session  
and a list of attendees.

(U)

DESCRIPTORS: \*Symposia, \*Holography, \*Optical  
processing, \*Data processing, Synthetic aperture  
radar, Image processing, Pattern recognition,  
Acousto-optics

(U)

IDENTIFIERS: WUAFOSR2305B1, PE61102F

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 132 12/1 9/2

MARYLAND UNIV COLLEGE PARK DEPT OF COMPUTER SCIENCE

Prime Program Decomposition, (U)

83 6P Gannon, J. D.; Hecht, M.

S.; Herbold, R. J.;

CONTRACT: F49620-80-C-0001

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0489

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings of the Annual Hawaii International Conference on System Sciences (16th) p25-29 1983.  
Reprint: Prime Program Decomposition.

DESCRIPTORS: \*Algorithms, \*Computer programs, \*Subroutines, Metric system, Graphs, Flow charting, Nodes, Fortran, Functions, Reprints (U)  
IDENTIFIERS: PE61102F, WUAFOSR2304A2 (U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 131 7/4

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

Ground States of Molecules. 56. MNDO Calculations for Molecules Containing Sulfur, (U)

SEP 81 23P Dewar, Michael J. S.;

McKee, Michael L.;

CONTRACT: AFOSR-79-0008

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0468

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Computational Chemistry, v4 n1 p84-103 1983.  
Reprint: Ground States of Molecules. 56. MNDO Calculations for Molecules Containing Sulfur.

DESCRIPTORS: \*Ground state, \*Sulfur compounds, \*Molecular orbitals, Heat of formation, Dipole moments Energy levels, Bonding, Ionization potentials, Reprints (U)  
IDENTIFIERS: PE61102F, WUAFOSR2303B2 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 060 5/2 20/13 20/11

THERMOPHYSICAL AND ELECTRONIC PROPERTIES INFORMATION  
ANALYSIS CENTER LAFAYETTE INTransport Properties of Selected Elements and  
Compounds in the Gaseous State. Part 2.

(U)

DESCRIPTIVE NOTE: State-of-the-art rept.,  
DEC 73 82P Liley, P. E. ;

REPT. NO. CINDAS-TPRC-22

CONTRACT: AFOSR-72-2396

PROJ: 9750

TASK: 01

MONITOR: AFOSR TR-74-1165

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A008 471.  
 ABSTRACT: Tables of viscosity, thermal conductivity, and diffusion coefficient have been prepared for sixty-nine binary mixtures. The temperature range was from 100 to 3000 K. For the substances comprising the binary mixtures recent recommendations were used, some of these being taken from our earlier report (Part 1). For the mixtures the Lennard-Jones 6-12 potential was used for viscosity and diffusion, and a linear mixing rule was employed for thermal conductivity. The precision of the tabulated values is reviewed. It is concluded that significant discrepancies can still exist between theoretical and experimental quantities. (Author)

DESCRIPTORS: \*Tables(Data), \*Thermophysical properties, \*Thermal properties, \*Physical properties, Viscosity, Diffusion coefficient, Gases, Thermal conductivity, Value, Tabulation processes, Liquids  
 IDENTIFIERS: Binary mixtures, WUAFOSR975001

(U)

(U)

(U)

AD-A129 060

UNCLASSIFIED

PAGE

121

AD-A129 013

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A129 013 9/2

STATE UNIV OF NEW YORK AT STONY BROOK DEPT OF COMPUTER  
SCIENCEProving Feal-Time Properties of Programs  
with Temporal Logic.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
31 13P Bernstein, Arthur ; Harter,

Paul K. ; Jr.

CONTRACT: AFOSR-81-0197

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0284

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings of the  
 Symposium on Operating Systems Principles (8th),  
 p1-11 Dec 81.  
 Reprint: Proving Real-Time Properties of  
 Programs with Temporal Logic.

DESCRIPTORS: \*Computer programming, Programmers,  
 Real time, Computer logic, Reprints  
 IDENTIFIERS: WUAFOSR2304A2, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 81E 12/1

MARYLAND UNIV COLLEGE PARK DEPT OF MATHEMATICS

Multivariate Dependent Renewal Processes.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 JAN 83 28P Slud, Eric ;  
 REPT. NO. MD83-1-ES, TR-83-1  
 CONTRACT: AFOSR-82-0187  
 PROJ: 2004  
 TASK: AS  
 MONITOR: AFOSR TR-83-0293

## UNCLASSIFIED REPORT

ABSTRACT: A new class of reliability point-process models; for dependent components is introduced. The dependence is expressed through a regression, following a form suggested for survival data analysis involving the current life-length of the components. After formulating the current-life process as a Markov process with stationary transitions and stating some general results on asymptotic behavior, the authors describe the stationary distributions in some bivariate examples. Finally, they discuss statistical inference for the new models, exhibiting and justifying full- and partial-likelihood methods for their analysis.

DESCRIPTORS: \*Mathematical models, \*Reliability, \*Replacement theory, Life tests, Markov processes, Multivariate analysis, Bivariate analysis, Regression analysis, Statistical inference  
 IDENTIFIERS: WUAFOSR2304A5, PE61\*02F

(U)

(U)

AD-A128 818

UNCLASSIFIED

PAGE

122

AD-A128 671

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 671 11/9 7/5 20/3

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 FEB 82 8P Turro, Nicholas J. ; Chow, Ming-Fea ; Chung, Chao-Jen ; Tung, Chem-Ho ;  
 CONTRACT: AFOSR-81-0013  
 PROJ: 2303  
 TASK: B2  
 MONITOR: AFOSR TR-83-0404

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical Society, v105 n6 p1572-1577 1983.  
 Reprint: Magnetic Field and Magnetic Isotope Effects on Photoinduced Emulsion Polymerization.

DESCRIPTORS: \*Polymerization, \*Photochemical reactions, \*Emulsions, Magnetic fields, Isotope effect, Reprints  
 IDENTIFIERS: Photoinduced emulsion polymerization, Magnetic isotope effects, PE61102F, WUAFOSR23082

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 669 6/5 6/1

CALIFORNIA UNIV SAN FRANCISCO

Mitochondrial ADP-Ribosyltransferase  
System.

DESCRIPTIVE NOTE: Technical rept.,

82 15P Kun, Ernest ; Kirsten, Eva ;  
CONTRACT: F49620-81-C-0007

PRJW: 2312

TASK: A5

MONITOR: AFOSR TR-83-C144

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in ADP-Ribosylation  
Reactions, p193-205 1982.  
Reprint: Mitochondrial ADP-Ribosyltransferase  
System.DESCRIPTORS: \*Mitochondria, \*Transferases,  
\*Hydrolases, \*Ribose, \*Adenosine phosphates,  
Liver, Preparation, Bioassay, Extraction,  
Reprints  
IDENTIFIERS: \*Glycohydrolases, PE61102F,  
WUAFOSR2312A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 662 14/2

WRIGHT STATE UNIV DAYTON OH DEPT OF MATHEMATICS AND  
STATISTICSAn Output Matching Approach to  
Multivariable Linear Digital Control.

DESCRIPTIVE NOTE: Final scientific rept. 1 Jun-31 Aug

82, NOV 82 9P Miller, David F. ;

REPT. NO. 0001

CONTRACT: AFOSR-82-0208

PROJ: 2304

TASK: D9

MONITOR: AFOSR TR-83-0400

UNCLASSIFIED REPORT

ABSTRACT: A simple and direct state space approach  
to the digital control of multivariable linear system  
is discussed. Control is provided by minimizing the  
mean square error between controlled plant outputs  
and specified desired output trajectories at sampling  
instants. Systems of linear equations for digital  
control inputs result with solutions assuming a  
natural constant forward and feedback gain form.  
Optimal gains are determined using elementary  
results from linear systems theory and standard  
techniques from linear algebra. Numerical  
applications to examples in simple model following,  
digital redesign, and direct digital design are  
described. Partial state observability and the  
effects of sampling rate upon system performance are  
considered. Control smoothing through matching at  
multiple sampling instants is discussed. This  
strategy provides improved performance without  
additional computational expense or increased  
sampling rate. (Author)

(U)

DESCRIPTORS: \*Control systems, \*Linear systems,  
Multivariate analysis, Output, Matching, Linear  
algebraic equations, Errors, Numerical methods and  
procedures

(U)

IDENTIFIERS: Digital control, PE61102F,  
WUAFOSR2304D9

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 637 22/2 7/4 20/6

SRI INTERNATIONAL MENLO PARK CA MOLECULAR PHYSICS LAB

Conjectures on the Origin of the Surface Glow  
of Space Vehicles.

(U)

OCT 82 5P Stanger, Tom G. ;

CONTRACT: F49620-82-K-0025

PROJ: 2303

TASK: A2

MONITOR: AFOSR TR-83-0409

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Geophysical Research  
Letters, v10 n2 p130-132 Feb 83.  
Reprint: Conjectures on the Origin of the Surface  
Glow of Space Vehicles.

DESCRIPTORS: \*Spacecraft, \*Surface properties,  
\*Fluorescence, \*Glow discharges, Space shuttles,  
Oxygen, Hydroxides, Vibrational spectra,  
Reprints  
IDENTIFIERS: Surface glow, Space vehicles,  
WUAFOSR22303A2, PES1102F

(U)

(U)

AD-A128 637

UNCLASSIFIED

PAGE

124

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 629 9/2

MARYLAND UNIV COLLEGE PARK DEPT OF COMPUTER SCIENCE

Event-Based Specification and Verification of  
Distributed Systems.

(U)

DESCRIPTIVE NOTE: Doctoral thesis,

82 188P Chen, Bo-Shoe ;

CONTRACT: F49620-80-C-0001

PROJ: 2304

TASK: A2

MONITOR: AFOSR TR-83-0338

## UNCLASSIFIED REPORT

ABSTRACT: Computations of distributed systems are  
extremely difficult to specify and verify using  
traditional techniques because the systems are  
inherently concurrent, asynchronous and  
nondeterministic. Furthermore, computing nodes in a  
distributed system may be highly independent, and the  
entire system may lack an accurate global clock. In  
this thesis, the author develops an event-based model  
to specify formally the behavior (the external view)  
and the structure (the internal view) of distributed  
systems. The specification technique has a rather  
wide range of applications. Examples from different  
classes of distributed systems, including  
communication systems, transaction-based systems and  
process control systems are demonstrated. Both  
control-related and data-related properties of  
distributed systems are specified using two  
fundamental relationships among events: the precedes  
relation, representing time order; and the enables  
relation, representing causality. No assumption  
about the existence of a global clock is made in the  
specifications. The correctness of a design can be  
proved before implementation by checking the  
consistency between the behavior specification and  
structure specification of a system. Moreover,  
since the specification technique defines the  
orthogonal properties of a system separately, each of  
them can then be verified independently. Thus, the  
proof technique avoids the exponential state-  
explosion problem found in state-machine  
specification techniques.

(U)

DESCRIPTORS: \*Distributed data processing, \*Computer  
program verification, \*Specifications, Computer  
architecture, Nodes, Communications networks,  
IDENTIFIERS: Computer models, Event based

(U)

(U)

AD-A128 629

UNCLASSIFIED

EVN35A



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 618 6/20 6/6

VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG CENTER  
FOR ENVIRONMENTAL STUDIESSublethal Effects of JP-4 on *Lepomis*  
*macrochirus*. (U)DESCRIPTIVE NOTE: Annual rept. no. 1, 1 Nov 81-31 Oct  
82.JAN 83 11P Cairns, John, Jr.; Buikema,  
Arthur L., Jr.; Doane, Thomas R.;

CONTRACT: AFOSR-82-0059

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0443

## UNCLASSIFIED REPORT

ABSTRACT: During the research project to investigate the sublethal effects of the water soluble fraction (WSF) of JP-4, a constant flow water soluble fractionator for the JP-4 was constructed. Procedures for chemical analyses to determine the percent of the WSF were developed and used. Static and dynamic bioassays were performed using the bluegill, *Lepomis macrochirus*. Blood chemistry tests were performed on control and exposed fish. Electron micrographs were taken of gill and liver tissue from control and exposed fish. Equipment and protocols were developed for measurement of respiration rates and preference/avoidance behavior of fish exposed to sublethal concentrations of the WSF of JP-4. (U)

DESCRIPTORS: \*Jet engine fuels, \*Toxicity, \*Aquatic organisms, Water, Solubility, Water soluble materials, Electron microscopy, Bioassay, Fishes, Chemical analysis, Tissues (Biology), Blood chemistry, Blood analysis, Test methods, Behavior, Respiration, Rates  
IDENTIFIERS: PE81102F, WUAFOSR2312A5 (U)  
(U)

AD-A128 618

UNCLASSIFIED

PAGE

125

AD-A128 612

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 612 4/1 20/9 5/2

SRI INTERNATIONAL MENLO PARK CA

Latitudinal Variations of Auroral-Zone  
Ionization Distribution. (U)DESCRIPTIVE NOTE: Final scientific rept. 1 Dec 79-30  
Nov 82.FEB 83 212P Vickrey, James F.; Robinson,  
Robert M.; Tsunoda, Roland T.;

CONTRACT: F49620-80-C-0014

PROJ: 2310

TASK: A2

MONITOR: AFOSR TR-83-0389

## UNCLASSIFIED REPORT

ABSTRACT: This study on ionization in the auroral zone involved data reduction and analysis to determine (1) the electrodynamics of the auroral E layer and (2) the origin and evolution of high-latitude F-region plasma-density structure. Data obtained by the Chatanika incoherent-scatter radar as well as by rockets and satellites were used in the study. The results are especially useful in characterizing the morphology of E-region conductivity enhancements, and the production, transport, and decay of F-region plasma throughout the auroral zone. The relationship between currents (both perpendicular and field-aligned) and electric fields has also been studied. In addition to these experimental investigations, SRI has contributed new theoretical concepts in the areas of cross-field plasma diffusion and global plasma-density irregularity morphology. (U)

DESCRIPTORS: \*Aurorae, \*Ionization, \*Plasmas (Physics), \*Latitude surveys, Variations, Convection (Atmospheric), Diffusion, Electrodynamics, High latitudes, F region, Data reduction, Density, Currents, Electric fields, Ionosphere, Decay, Transport, Morphology  
IDENTIFIERS: E layer, PE81102F, WUAFOSR2310A2, SRI-1181 (U)  
(U)

AD-A128 618

UNCLASSIFIED

PAGE

125

AD-A128 612

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 538

7/4

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

Versatile, High Resolution Continuum Source  
Atomic Absorption Flame Spectrometer with  
Resonance Flame Detector.

APR 82 7P Blackburn, M. B. ;  
Winefordner, J. D. ;  
CONTRACT: F49620-80-C-0005  
PROJ: 2303  
TASK: A1  
MONITOR: AFOSR TR-83-0396

UNCLASSIFIED REPORT

(U)

SUPPLEMENTARY NOTE: Pub. in Canadian Jnl. of  
Spectroscopy, v27 n5 p137-140 1982.

Reprint: Versatile, High Resolution Continuum  
Source Atomic Absorption Flame Spectrometer with  
Resonance Flame Detector.

DESCRIPTORS: \*Spectrometers, \*High resolution,  
\*Spectral emittance, \*Bandwidth, Detection,  
Sensitivity, Monochromators, Spectral lines,  
Resonance, Fluorescence, Canada, Reprints  
IDENTIFIERS: \*Atomic absorption flame spectrometers,  
AACS(Atomic Absorption Continuum Source  
Spectrometry), Resonance flame detector,  
Continuum source, PE61102F, WUAFOSR2303A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 536

12/1 5/2

DELAWARE UNIV NEWARK DEPT OF MATHEMATICAL SCIENCES

Report on Sponsored Research on Algorithmic  
Methods in Probability.

DESCRIPTIVE NOTE: Final rept. 1 Jun 81-31 May 82,  
APR 83 10P Neuts, Marcel F. ;  
CONTRACT: AFOSR-77-3236  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0417

UNCLASSIFIED REPORT

(U)

ABSTRACT: This report covers the development of  
algorithmic procedures for the study of stochastic  
processes and queues. The report submitted for the  
preceding year listed a large number of papers,  
which were at that time submitted or accepted for  
publication. Most of these papers have now appeared  
and seem to have a seminal influence on the research  
on the algorithmic approach to probability and its  
applications, which is being initiated at more and  
more centers in Europe and Asia. The research  
program sponsored by the Air Force of  
Scientific Research since 1977 has, we believe,  
contributed significantly to the much needed task of  
bringing the findings and methodology of the theory  
of stochastic models closer to its genuine  
applications in technology. It has done so by the  
elaboration of mathematical methods that lead to  
implementable algorithms and to detailed numerical  
results, whose interpretation yields insight into the  
stochastic behavior of queues and related stochastic  
models.

(U)

DESCRIPTORS: \*Algorithms, \*Probability,  
\*Bibliographies, Air Force research, Stochastic  
processes, Queueing theory, Mathematical models,  
Reports, Grants

(U)

IDENTIFIERS: PE61102F, WUAFOSR2304A5

(U)

AD-A128 538

UNCLASSIFIED

PAGE

126

AD-A128 536

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 534 20/5

ILLINOIS UNIV AT URBANA DEPT OF ELECTRICAL ENGINEERING

Alkali-Rare Gas and Metal-Halide  
Molecules as Potential Tunable and Efficient  
Lasers in the Visible. (U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 81-30 Sep 82,  
NOV 82 25P Eden, J. G. ;

REPT. NO. UIU-ENG-82-2554

CONTRACT: AFOSR-79-0138

PROJ: 2301

TASK: A3

MONITOR: AFOSR TR-83-0429

UNCLASSIFIED REPORT

ABSTRACT: Experiments involving metal-halide  
dissociation lasers are described. A UV-preionized,  
discharge-pumped CdI (cadmium iodide) laser has  
been demonstrated at 657 nanometers. In addition,  
iron (Fe) and lithium (Li) photodissociation  
lasers have been demonstrated. (Author)  
DESCRIPTORS: \*Halides, \*Photodissociation,  
\*Tunable lasers, Cadmium, Iodides, Visible  
spectra, Laser pumping, Zinc, Mercury, Iron,  
Dissociation, Dye lasers, Laser materials,  
Spectrum analysis, Rare gases, Salts  
IDENTIFIERS: Metal halides, Cadmium iodide laser,  
PE61102F, WUAFOSR2301A3 (U)

AD-A128 534

UNCLASSIFIED

PAGE

127

AD-A128 533

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 533 5/1 20/5 20/8

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

Research Studies on Radiative Collisional  
Processes. (U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 79-30 Sep 82,  
NOV 82 47P Harris, S. E. ; Young, J. F. ;

REPT. NO. GL-3520

CONTRACT: F49620-80-C-0023

PROJ: 2301

TASK: A1

MONITOR: AFOSR TR-83-0428

UNCLASSIFIED REPORT

ABSTRACT: This program has supported theoretical  
and experimental studies in several areas of device  
physics: the physics and applications of radiative  
collisional lasers, pair absorption pumped lasers,  
the use of microwave pumping for the excitation of  
excimer and other high pressure lasers, and the  
development of anti-Stokes spectroscopy for the  
study of core-excited atomic levels. (Author)  
DESCRIPTORS: \*Research management, \*Laser induced  
fluorescence, \*Particle collisions, Excimers,  
Radiative transfer, Laser pumping, Microwave  
optics, Stokes radiation, Ultraviolet spectroscopy,  
Excitation, Emission spectra, Atomic energy  
levels, Theory, Experimental data  
IDENTIFIERS: Excimer lasers, Alkali atoms,  
PE61102F, WUAFOSR2301A1 (U)

AD-A128 534

UNCLASSIFIED

PAGE

127

AD-A128 533

UNCLASSIFIED

EVN35A



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 501 17/2 20/14 12/1

CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING AND  
COMPUTER SCIENCEA Collision Resolution Protocol with Limited  
Channel Sensing - Finitely Many Users.

(U)

DESCRIPTIVE NOTE: Technical rept..

FEB 83 46P Papanoni-Kazakos, P. ;

REPT. NO. EECS-TR-83-2 Marcus, Glenn D. ; Georgiopoulos, Michael ;

CONTRACT: AFOSR-78-3695

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0419

## UNCLASSIFIED REPORT

ABSTRACT: In this paper, the authors consider the random accessing of a single slotted channel by a finite number of independent, data transmitting bursty users. They adopt the assumption that each user monitors the channel only while he is blocked. They also assume that the channel outcomes (visible to each user) are ternary. That is, each channel slot is perceived as either empty or successfully busy, or as a collision slot. Propagation delays are disregarded. For the above model, the authors propose and analyze a collision resolution protocol (CRLS) with tree search characteristics. For identical users with binomial transmission processes, they find lower bounds on the CRLS throughput, and compute upper bounds on the induced delays in transmission. Their results are compared with those induced by the dynamic tree protocol of Capetanakis, where the feedback sensing is continuous in the latter. The CRLS performs surprisingly well. For asymptotically many users, its throughput is higher than the throughput of the nondynamic tree protocol of Capetanakis, and less than 7 percent lower than the throughput of the dynamic form of the latter. The CRLS also compares well in terms of delays, and it is robust in the presence of channel errors.

DESCRIPTORS: \*Data transmission systems, \*Burst transmission, \*Multiple access, \*Computations, Delay, User needs, Slots, Monitoring, Blocking, Collisions, Numerical methods and procedures, Throughput, Feedback, Channels  
IDENTIFIERS: Protocols, Collision resolution

AD-A128 501

UNCLASSIFIED

PAGE

129

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 493 8/11 18/3

CALIFORNIA UNIV BERKELEY SEISMOGRAPHIC STATION

Regional Discrimination with Broadband  
Data.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 81-30 Sep 82,

FEB 83 140P McEvilly, T. V. ; Johnson,

Lane R. ;

CONTRACT: F49620-79-C-0028, ARPA Order-3291

PROJ: 1A10

MONITOR: AFOSR TR-83-0380

## UNCLASSIFIED REPORT

ABSTRACT: The research supported by this grant is directed toward the general problems of detection and identification of underground explosions through the study of radiated seismic waves. Particular emphasis is on the collection and analysis of broadband seismic data at near and regional distances. Specific elements of the research program are: (1) recording of broadband data from events at the Nevada Test Site; (2) analysis of the coherence of ground motion near explosions and earthquakes; (3) study of the relative isotropic and non isotropic components of explosive sources through the application of moment tensor inversion techniques; (4) analysis of regional surface wave data in order to obtain models for the velocity and attenuation in the crust; (5) archival of near and regional data sets which are of value to the general discrimination problem. Section II describes the analysis of array data recorded 1.9 km from the explosion Liptauer in Yucca Valley for the Nevada Test Site. Section III presents a new way of looking at frequency-wavenumber spectral estimation with array data. Section IV examines the problem that exists when the velocity structure is complicated to the extent that it can be considered to have a random component. Section V treats the problem of scattering of elastic waves by small inhomogeneities. The solution is expressed in terms of a moment tensor expansion of the properties of the scatterer.

DESCRIPTORS: \*Seismic waves, \*Underground explosions, \*Nuclear explosion detection, Discrimination, Seismic signatures, Broadband, Seismic arrays, Spatial filtering, Ground motion  
IDENTIFIERS: PE62714E

AD-A128 493

UNCLASSIFIED

EVN35A



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 485 20/4 12/1

NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CA

Research on Topics in Transonic Flow Theory  
and Adaptive Grid Generation. (U)DESCRIPTIVE NOTE: Annual technical rept. 1 Feb 82-31  
Jan 83.

JAN FEB 83 12P Nixon, D. ; Klopfer, G. H. ;

CONTRACT: F49620-79-C-0054

PROJ: 2307

TASK: A1

MONITOR: AFOSR TR-83-0424

## UNCLASSIFIED REPORT

ABSTRACT: This report summarizes work concerned with some topics connected with a transonic flow theory and also some problems in adaptive mesh procedures. The work on adaptive mesh procedures is concerned with the development of adaptive mesh strategies and solution procedures for highly clustered adaptive meshes. It has been found that the strong conservation law form of the governing equations in computational variables cannot capture the shock waves correctly for arbitrary clustering. Methods for correcting this problem have been investigated. The work on transonic flow theory is concerned with the existence of multiple solutions in full potential calculations. Since the full potential equation is difficult to analyze compared with small disturbance equation, multiple solutions have been found using transonic small disturbance theory. These results have been analyzed using the transonic integral equation theory and indicate that the transonic potential theory is not formulated uniquely.

DESCRIPTORS: \*Transonic flow, \*Grids, \*Numerical analysis, Partial differential equations, Adaptive systems, Mesh, Clustering, Strategy, Computations, Shock waves, Variables, Connections, Integral equations, Finite difference theory, Transformations(Mathematics), Truncation, Errors (U)  
IDENTIFIERS: PEG1102F, WUAFOSR2307A1 (U)

AD A128 485

UNCLASSIFIED

PAGE

131

AD-A128 484

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 484 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC  
PRECESSESOn Limiting Distributions of Order  
Statistics with Variable Ranks from  
Stationary Sequences. (U)

DESCRIPTIVE NOTE: Technical rept.,

JAN 83 31P Cheng, Shihong ;

REPT. NO. TR-25

CONTRACT: F49620-82-C-0009

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0414

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Order statistics,  
\*Sequences(Mathematics), \*Distribution functions,  
Normal distribution, Random variables,  
Limitations, Stationary, Theorems, Covariance, (U)  
Convergence (U)  
IDENTIFIERS: PEG1102F, WUAFOSR2304A5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A128 482

12/1

UNIVERSITY OF CENTRAL FLORIDA ORLANDO DEPT OF MATHEMATICS  
AND STATISTICSCharacterizing Dominales on a Family of  
Triangular Norms.

(U)

DESCRIPTIVE NOTE: Technical rept.,

OCT 82 28P Sherwood, Howard ;

REPT. NO. 20-1160 001

CONTRACT: AFOSR 81-0124

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0386

## UNCLASSIFIED REPORT

ABSTRACT: In this paper the dominated relation is  
introduced for a family of subgroups on the unit  
interval. The dominated relation was shown to be  
transitive on the family. A norm is a function  
defined from  $(0, 2)$  to  $(0, 1)$  which is  
nondecreasing and concave. A family of dominated  
relations is defined as a multiset and one as a  
family.

IDENTIFIERS: P561102F, WUAFOSR2304A4

Keywords: (Mathematics), Real numbers,  
Inequalities, Theorems, Transitions,  
Points (Mathematics), Boundaries

(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 481

7/3

20/1

NORTH DAKOTA STATE UNIV FARGO DEPT OF CHEMISTRY

Organic Sonochemistry, Sonic Acceleration of  
the Reformatsky Reaction,

(U)

APR 82 4P Han, Byung-Hee ; Boudjouk,

Philip ;

CONTRACT: AFOSR-80-0239

PROJ: 2303

TASK: 82

MONITOR: AFOSR TR-83-0377

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Organic  
Chemistry, v47 p5030-5032 1982.  
Reprints: Organic Sonochemistry, Sonic Acceleration  
of the Reformatsky Reaction.

IDENTIFIERS: Organic chemistry, Sound waves,  
Analysis, Reaction kinetics, Activation energy,  
Acoustic waves, Ultrasonics, Reprints  
trifluoride, Sonochemistry, Reformatsky  
reactions, Sonocatalysis, Acoustic chemistry,  
Sonically activated metals, Sonication, Active  
metals, WUAFOSR230382, P561102F

(U)

(U)



UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 477 12/1

SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

On Bayes Estimation of Reliability for the Birnbaum-Saunders Fatigue Life Model, (U)

DEC 81 5P Padgett, W. J. ;  
CONTRACT: F49620-79-C-0140, /FOSR-81-0166  
PROJ: 2304  
TASK: A5  
MONITOR: AFOSR TR-83-0384

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Reliability, VR-31 n5 p436-438 Dec 82.

DESCRIPTORS: \*Mathematical models, \*Fatigue life, \*Reliability, Maximum likelihood estimation, Bayes theorem, Monte Carlo method, Reprints (U)  
IDENTIFIERS: Method of moments, Birnbaum Saunders fatigue life model, PE61102F, WUAFOSR2304A5 (U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 478 7/4

TEXAS UNIV AT AUSTIN DEPT OF PHYSICS

Azimuthal Dependence of Impact Scattering in Electron Energy Loss Spectroscopy, (U)

83 8P Davies, B. M. ; Erskine, J. L. ;  
CONTRACT: AFOSR-80-0154  
PROJ: 2303  
TASK: A2  
MONITOR: AFOSR TR-83-0394

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Electron Spectroscopy and Related Phenomena, v29 p323-328 1983.

Reprint: Azimuthal Dependence of Impact Scattering in Electron Energy Loss Spectroscopy.

DESCRIPTORS: \*Azimuth, \*Electron impact spectra, \*Surface chemistry, \*Electron spectroscopy, Electron energy, Losses, Tungsten, Hydrogen, Angles, Electron scattering, Vibrational spectra, Chemisorption, Measurement, Reprints (U)  
IDENTIFIERS: \*EELS(Electron Energy Loss Spectroscopy), Impact scattering, PE61102F, WUAFOSR2303A2 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 475 12/1

SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

Nonparametric Empirical Bayes Estimation of Reliability.

(U)

81 12P Liang, K. Y.; Padgett, W.

J. J.  
 CONTRACT: F49620 79-C 0140  
 PROJ: 2304  
 TASK: A5  
 MONITOR: AFOSR IR-83-0382

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in Metron, Istituto Di Statistica E Ricerca Sociale, Colorado Springs, Vol. 47, 2142-2151, 1991, 81.  
 Empirical Bayes Estimation of Reliability

DESCRIPTORS: Reliability distribution functions. Reliability estimates. Bayes theorem. Optimization. Asymptotic normality. Monte Carlo method. 22 Jan 83. 8-Prints. Italy  
 IDENTIFIERS: PE6102F, WUAFOSR230385

(U)

(U)

AD-A128 475

UNCLASSIFIED

PAGE

134

AD-A128 474

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 474 7/2 12/1 20/10

CALIFORNIA INST OF TECH PASADENA ARTHUR AMOS NOYES LAB 'F' CHEMICAL PHYSICS

Collinear Quantum Mechanical Probabilities and Rate Constants for the Br + HCl(v=2,3,4) Reaction Using Hyperspherical Coordinates.

(U)

AUG 82 2P Kaye, Jack A.; Kupperman, Aaron;  
 CONTRACT: F49620-79-C-0187  
 PROJ: 23-3  
 TASK: B1  
 MONITOR: AFOSR IR-83-0391

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in Chemical Physics Letters, Vol. 66, 557-574, 12 Nov 82. Presented at the National Meeting of the American Chemical Society (March) New York, NY Aug 81.

Reprint: Collinear Quantum Mechanical Probabilities and Rate Constants for the Br HCl(v=2,3,4) Reaction Using Hyperspherical Coordinates.

DESCRIPTORS: Reaction kinetics. Bromine. Hydrogen chloride. Rates. Probability. Constants. Quantum statistics. Vibrational spectra. Dynamics. Dynamics. Reprints

IDENTIFIERS: Hyperspherical coordinates. Quantum mechanics. Vibrational state. Deexcitation. Rate constants. PE61102F, WUAFOSR230381

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 487 4/2 4/1

CORNELL UNIV ITHACA NY SCHOOL OF ELECTRICAL  
ENGINEERINGComparison of Tropopause Height and Frontal  
Boundary Locations Based on Radar and  
Radiosonde Data.DESCRIPTIVE NOTE: Technical rept.,  
DEC 82 8P Larsen, M. F. ; Roettger, J.

CONTRACT: AFOSR-83-0100

PROJ: 2314

TASK: A1

MONITOR: AFOSR TR-83-0392

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Geophysical Research  
Letters, v10 n4 p325-328 Apr 83.Reprint: Comparison of Tropopause Height and  
Frontal Boundary Locations Based on Radar and  
Radiosonde Data.DESCRIPTORS: \*Tropopause, \*Altitude,  
\*Fronts(Meteorology), Atmospheric temperature,  
Temperature gradients, Boundary layer,  
Reprints

IDENTIFIERS: PE61102F, WUAFOSR2310A1

AD-A128 487

UNCLASSIFIED

PAGE

135

AD-A128 466

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 466 7/3

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

Organosilicon Rotanes. Synthesis and an  
Unexpected Rearrangement.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
OCT 82 3P Carlson, Corey W. ; Zhang,  
Xing-Hua ; West, Robert ;

CONTRACT: AFOSR-82-0067

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0399

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v2 p453-454  
1983.Reprint: Organosilicon Rotanes: Synthesis and an  
Unexpected Rearrangement.DESCRIPTORS: \*Organic compounds, \*Silanes,  
\*Synthesis(Chemistry), \*Cyclic compounds,  
Methylenes, Alkyl radicals, Alkali metals,  
Condensation reactions, Resonance,  
Formulations(Chemistry), Reprints

(U)

IDENTIFIERS: Organosilicon rotanes,  
Polyspirocyclopolyisilanes, PE61102F,

(U)

WUAFOSR2303B2

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 465 7/3 11/9 7/4 20/8

BRISTOL UNIV (ENGLAND) DEPT OF INORGANIC CHEMISTRY

Synthesis and Characterization of Tungsten-Cobalt, -Rhodium and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-CGGH4Me-4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7) and PtW mu-C(C6H4Me-4)C(O)(CO)(PMe3)(eta4-C8H12)(eta5-C5H5).

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUL 82 9P Jeffery, John C.; Sambale, Clements; Schmidt, Manfred F.; Stone, F. Gordon A.;

CONTRACT: AFOSR-82-0070

F500: 2303

TASK: B2

MONITOR: AFOSR TR-83-0407

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v1 n12 p1507-1604 1982.

Reprints: Synthesis and Characterization of Tungsten-Cobalt, -Rhodium, and -Platinum Compounds and the X-Ray Crystal Structures of RhW(mu-CGGH4Me-4)(CO)2(PMe3)(eta5-C5H5)(eta5-C9H7) and PtW mu-C(C6H4Me-4)C(O)(CO)(PMe3)(eta4-C8H12)(eta5-C5H5).

DESCRIPTORS: \*Synthesis (Chemistry), \*Classification, \*Metal complexes, \*Organometallic compounds, \*X ray spectroscopy, Molecular structure, X ray diffraction, Crystal structure, Rhodium, Platinum, Cobalt, Tungsten, Metal metal bonds, Phosphine, Ketenes, Cyclic compounds, Reprints

(U)

IDENTIFIERS: Ketenyl radicals, X ray crystallography, PE61102F, WUAFOSR230382

(U)

AD-A128 465

UNCLASSIFIED

PAGE

136

AD-A128 464

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 464 7/4

TEXAS UNIV AT AUSTIN DEPT OF PHYSICS

Absorbate Structure Modeling Based on Electron Energy Loss Spectroscopy and Lattice Dynamical Calculations. Application to O/Al(111).

(U)

DESCRIPTIVE NOTE: Technical rept.,

83 9P Strong, R. L.; Firey, B.; deWette, F. W.; Erskine, J. L.;

CONTRACT: AFOSR-80-0154, NSF-DMR81-21916

PROJ: 2303

TASK: A2

MONITOR: AFOSR TR-83-0402

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Electron Spectroscopy and Related Phenomena, v29 p187-190 1983.

Reprint: Absorbate Structure Modeling Based on Electron Energy Loss Spectroscopy and Lattice Dynamical Calculations. Application to O/Al(111).

DESCRIPTORS: \*Electron spectroscopy, \*Lattice dynamics, \*Chemisorption, \*Oxygen, \*Aluminum, Vibrational spectra, Chemical bonds, Models, Reprints

(U)

IDENTIFIERS: \*EELS (Electron Energy Loss Spectroscopy), Calculations, PE61102F, WUAFOSR2303A2

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 463 12/1

UNIVERSITY OF CENTRAL FLORIDA ORLANDO DEPT OF MATHEMATICS  
AND STATISTICSDominates on Equivalence Classes of Semigroup  
Operations (U)

DESCRIPTIVE NOTE: Final rept. May 81-Aug 82.

OCT 82 22P Sherwood, Howard ;

CONTRACT: AFOSR-81-0124

PROJ: 2304

TASK: A4

MONITOR: AFOSR TR-83-0385

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the International Symposium on Functional Equations (19th), Brittany, France, May 81 and at the International Symposium on Functional Equations (20th), Oberwolfach, Germany, F.R. Aug 82.

ABSTRACT: Initially the problem was to study the dominates relation on a collection of semigroup operations called triangular norms. This led to an equivalent problem -- studying subadditivity of certain semigroup operations defined on the non-negative reals. The setting was later generalized to include both problems and to bring essentials of the problem into sharper focus. In the generalization, a partially ordered set  $S$  was endowed with the collection,  $Op(s)$ , of all semigroup operations which had the same identity,  $e$ , and were non-decreasing in place. The dominates relation was defined on  $Op(S)$ . The collection,  $Map(S)$ , of order-preserving bijections from  $S$  to  $S$  map  $e$  to itself was used to partition  $Op(S)$  into equivalence classes -- two objects being placed in the same class if they were isomorphic via some member of  $Map(S)$ . Dominates restricted to any equivalence class in  $Op(S)$  was shown to exhibit a certain homogeneity relative to composition of elements in  $Map(S)$ . Transitivity of dominates on an equivalence class was shown to be equivalent to an appropriate subset of  $Map(S)$  being algebraically closed under composition. The equivalence classes determined by continuous triangular norms were characterized in terms of

DESCRIPTORS: \*Groups(Mathematics),

AD-A128 463

## UNCLASSIFIED

PAGE

137

AD-A128 462

## UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 462 8/5 20/14

PHYSICAL DYNAMICS INC JELLEVUE WA

The Transient Critical-Level Interaction in  
a Boussinesq Fluid, (U)

OCT 81 22P Fritts, David C. ;

CONTRACT: F49620-81-C-0009

PROJ: 2310

TASK: A1

MONITOR: AFOSR TR-83-0374

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Geophysical Research, v87 nC10 p7997-8016, 20 Sep 82.  
Reprint: The Transient Critical-Level Interaction in a Boussinesq Fluid.

DESCRIPTORS: \*Internal waves, \*Gravity waves, Wave packets, Wave propagation, Interactions, Reprints (U)

IDENTIFIERS: Boussinesq fluid, Shear flow, PEG1102F, HUAFOSR2310A1 (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 461 7/4

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

Spatial and Temporal Studies of a Glow Discharge.

(U)

NOV 81 12P VAN DIJK, C.; SMITH, B. W.;

Winefordner, J. D.;

CONTRACT: F49620-80-C-0005

PROJ: 2303

TASK: A1

MONITOR: AFOSR TR-83-0401

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Spectrochimica Acta, 1978

13 p759-768 1982.

Reprints: Spatial and Temporal Studies of a Glow Discharge.

DESCRIPTORS: Glow discharges, Spatial distribution, Reaction time, Chemical analysis, Lasers, Excitation, Argon, Neon, Sodium, Diffusivity, Scattering, Reprints

IDENTIFIERS: Analytes, Diffusion coefficient, PLG1102F, WDAFOSR2303A1

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 457 7/3

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

Chemical Reactions of Tetramesityldisilene,

(U)

OCT 83 3P Fink, Mark J.; De Young,

Douglas J.; West, Robert; Michl, Josef;

CONTRACT: AFOSR-82-0067, NSF-CHE81-21122

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0398

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of American Chemistry Society, v105 n4 p1070-1071 1983.

Reprint: Chemical Reactions of Tetramesityldisilene.

DESCRIPTORS: Organic compounds, Chemical reactions, Silicon, Bonding, Methyl radicals, Phenyl radicals, Thermal properties, Photochemical reactions, Addition reactions, Reprints

IDENTIFIERS: Tetramesityldisilene, Thermolysis, Disilenes

(U)

(U)

AD-A128 461

UNCLASSIFIED

PAGE

138

AD-A128 457

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 454 20/8 12/1

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

Tritium Migration in Tritiated Anisole,

(U)

SEP 81 4P Devar, Michael J. S. ;

Reynolds, Charles H. ;

CONTRACT: AFOSR-79-0008, NSF-CHE78-03213

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0376

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of American Chemical Society, v104 n11 p3244-3246 1982.  
Reprint: Tritium Migration in Tritiated Anisole.

DESCRIPTORS: \*Molecular orbitals, \*Migration, \*Computations, \*Tritium, Chemical shifts, Ethenes, Alkyl radicals, Computers, Stability, Hydrogen, Reprints  
IDENTIFIERS: Experimental studies, MINDO-3, MESP(Minimum Energy Reaction Paths), Tritiated anisole, MINDO calculations, PEG1102F, WUAFOSR2303B2

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 453 20/8 11/9

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

Isomeric Sigma and Pi Radicals from Carboxylic Acids and Amides,

(U)

AUG 81 4P Devar, Michael J. S. ;

Pakiar, Ali H. ; Pierini, Adriana B. ;

CONTRACT: AFOSR-79-0008

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0375

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of American Chemical Society, v104 n11 p3242-3244 1982.  
Reprint: Isomeric Sigma and Pi Radicals from Carboxylic Acids and Amides.

DESCRIPTORS: \*Isomerization, \*Carboxylic acids, \*Carbenes, Molecular structure, Isomeric transitions, Cyclic compounds, Electron transfer, Computations, Molecular orbitals, Reprints

(U)

IDENTIFIERS: Cyclic carbenes, Orbital isomerisms, Singlet forms, Biradicals, MINDO(Modified Neglect Diatomic Overlap), PEG1102F, WUAFOSR2303B2

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 452 12/1

SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

Convergence of Weighted Sums of Arrays of Random Elements in Type p Spaces with Application to Density Estimation.

(U)

SEP 81 13P Taylor, Robert Lee ;  
 CONTRACT: F49620-79-C-0140  
 PROJ: 2304  
 TASK: A5  
 MONITOR: AFOSR TR-83-0383

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Sankhya: The Indian Jnl. of Statistics, v44 Series A Pt 3 p341-351 1982.

Reprint: Convergence of Weighted Sums of Arrays of Random Elements in Type p Spaces with Application to Density Estimation.

DESCRIPTIONS: \*Banach space, Probability density functions, Random variables, Convergence, Estimates, Arrays, Weighting functions, Reprints

(U)  
(U)

IDENTIFIERS: PEG1102F, WUAFOSR2304A5

AD-A128 452

UNCLASSIFIED.

PAGE

140

AD-A128 450

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 450 20/1 12/1

DELAWARE UNIV NEWARK DEPT OF MATHEMATICAL SCIENCES

The Three Dimensional Inverse Scattering Problem for Acoustic Waves.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 JUN 81 14P Angell, T. S. ; Colton, David  
 ; Kirsch, Andreas ;  
 CONTRACT: AFOSR-81-0103, AFOSR-79-0085  
 PROJ: 2304  
 TASK: A4  
 MONITOR: AFOSR TR-83-0408

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Differential Equations, v46 n1 p46-58 Oct 82.  
 Reprint: The Three Dimensional Inverse Scattering Problem for Acoustic Waves.

DESCRIPTIONS: \*Acoustic scattering, \*Inverse scattering, \*Acoustic waves, \*Differential equations, Three dimensional, Far field, Problem solving, Optimization, Approximation(Mathematics), Reprints

(U)  
(U)

IDENTIFIERS: PEG1102F, WUAFOSR2304A4



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 448

7/4

STANFORD UNIV CA DEPT OF CHEMISTRY

Multiphoton Ionization Photoelectron Spectroscopy: A New Method for Determining Vibrational Structure of Molecular Ions.

(U)

SEP 82 7P Anderson, S. L. ; Rider, D. M. ; Zare, R. N. ;  
 CONTRACT: AFOSR-81 0053  
 PROJ: 2303  
 TASK: B1  
 MONITOR: AFOSR TR-83-0378

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Chemical Physics Letters, v93 n1 p11-15, 19 Nov 82.  
 Reprint: Multiphoton Ionization Photoelectron Spectroscopy: A New Method for Determining Vibrational Structure of Molecular Ions.

DESCRIPTORS: \*Electron spectroscopy, \*Molecular vibration, \*Molecular ions, \*Molecular structure, photoelectron spectra, vibrational spectra, polyatomic molecules, two photon absorption, chlorobenzene, excitation, atomic energy levels, measurement, methodology, reprints  
 IDENTIFIERS: \*MPI(Multiphoton Ionization), PES(Photoelectron Spectroscopy),  
 WUAFOSR2303A1, PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 446

20/5

7/4

ROCHESTER UNIV NY DEPT OF CHEMISTRY

Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.

(U)

NOV 82 8P Huang, Xi-Yi ; Lin, Jui-teng ; George, Thomas F. ;  
 CONTRACT: AFOSR-82-0046  
 PROJ: 2303  
 TASK: A2  
 MONITOR: AFOSR TR-83-0406

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Zeitschrift fuer Physik B - Condensed Matter, v50 n2 p181-186 1983.  
 Reprint: Model for the Propagation of Pulsed Surface Polaritons with Quasi-Self-Induced Transparency.

DESCRIPTORS: \*Pulsed lasers, \*Surface chemistry, \*Gas dynamics, \*Reaction kinetics, Propagation, Interfaces, Maxwell's equations, Reprints  
 IDENTIFIERS: Polaritons, Quasi self induced transparency, Pulsed surface polaritons.  
 WUAFOSR2303A2, PE61102F

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 445 4/2

COLORADO STATE UNIV FORT COLLINS DEPT OF ATMOSPHERIC SCIENCE

A Relationship between Planetary Waves and Persistent Rain- and Thunderstorms in China  
- Zusammenhaenge Zwischen Planetaren Wellen und Anhaltenden Regen- und Gewitterstuermen in China.

MAY 82 34P Ding, Yi-hui ;Reiter, E. R.

CONTRACT: AFOSR 82-0162

PROJ: 2310

TASK: A1

MONITOR: AFOSR TR 83 0090

UNCLASSIFIED REPORT

CONTEMPORARY METEOROLOGICAL ARCHIVES for Meteorology, Physics, and Climatology, Ser. B, 731 p221-222 1982, Germany in German  
Abstract: A Relationship between Planetary Waves and Thunderstorms in China.

Abstracts: Planetary waves, Thunderstorms, Rainfall intensity, Troposphere, Waves, Synoptic pressure, Typhoons, German language, Reports

IDENTIFIERS: Planetary waves, WUAFOSR2310A1, (U)

PGS1102F (U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 444 7/3 21/9

PRINCETON UNIV NJ DEPT OF CHEMICAL ENGINEERING

A Mechanistic Study of Nitromethane Decomposition on Ni Catalysts.

DESCRIPTIVE NOTE: Final rept.,  
OCT 82 20P Benziger, Jay ;

CONTRACT: AFOSR-82-0099

PROJ: 2303

TASK: D9

MONITOR: AFOSR TR-83-0405

UNCLASSIFIED REPORT

ABSTRACT: Nitromethane is one of several compounds which decomposes exothermically and may be used as a monopropellant in small rocket thrusters and demand gas generators. The use of nitromethane for such uses has not received much attention due to the absence of an appropriate catalyst to facilitate its decomposition. Recently, the decomposition of nitromethane over NiO and Cr2O3 catalysts has been observed to examine the feasibility of a nitromethane based monopropellant system. These studies indicated that a NiO/alumina catalyst was effective in causing nitromethane decomposition. However, relative to existing hydrazine based monopropellant systems the nitromethane NiO/alumina system suffered two severe drawbacks; first, it required much higher light-off temperatures than hydrazine based systems, and second, the decomposition reaction poisoned the catalyst with carbon degrading performance with continued use.

DESCRIPTORS: \*Nitromethane, \*Decomposition, \*Catalysts, \*Reaction kinetics, Monopropellants, Mixtures, Catalysis, Oxidation, Nickel compounds, Aluminum, Reaction time, Chemical bonds, Deposition, Carbon, Hydrogen cyanide  
IDENTIFIERS: Nickel oxide catalysts (U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A128 443 12/1

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

Testing Whether New is Better than Used of  
a Specified Age.

(U)

## DESCRIPTIVE NOTE: Technical rept.

JAN 83 18P Hollander, Myles ; Park, Dong

Ho ; Proschian, Frank ;

REPT. NO. FSU STATISTICS #646, TR 82-153 AFOSR

CONTRACT: F49620 82 K 0007

PROD: 2304

TASK: A5

MONITOR: AFOSR TR 83-0416

## UNCLASSIFIED REPORT

ABSTRACT: The authors introduce a new better than used at  $t$  sub  $o$  class of life distributions. Where the survival probability at age  $o$  is greater than or equal to the conditional survival probability at specified age  $t$  sub  $o$  greater than  $o$ . The dual class of new worse than used at  $t$  sub  $o$  life distributions is defined by reversing the direction of inequality. The authors preservation and improvement properties of the two classes under various reliability operations. They then develop a test of the null hypothesis that a new item has stochastically the same residual life length as does a used item of age  $t$  sub  $o$  versus the alternative hypothesis that a new item has stochastically greater residual life length than does a used item of age  $t$  sub  $o$ .

(U)

DESCRIPTORS: \*Stochastic processes, \*Probability distribution functions, Survivability, Probability, Failure, Preservation, Inequalities.

Reliability, Statistical tests, Hypotheses

IDENTIFIERS: Life distributions, WUAFOSR2304A5,

PLG1102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD A128 442 19/1 20/2 20/13 14/2

PURDUE UNIV LAFAYETTE IN THERMOPHYSICAL PROPERTIES RESEARCH LAB

Specific Heat of Octahydro - 1,3,5,7 -  
Tetranitro - 1,3,5,7 - Tetrazocine (HMX).

(U)

## DESCRIPTIVE NOTE: Interim scientific rept.,

JAN 83 26P Koshigoe, L. G. ; Shoemaker,

R. L. ; Taylor, R. E. ;

REPT. NO. TPRL-314

CONTRACT: F49620-81-K-0011

PROD: 2308

TASK: A1

MONITOR: AFOSR TR 83-0373

## UNCLASSIFIED REPORT

ABSTRACT: The specific heat of octahydro-1,3,5,7-tetranitro 1,3,5,7-tetrazocine (HMX) has been studied with a Differential Scanning Calorimeter from 315-486 degrees K. Measurements were made on both small pieces of single crystals of HMX and on a powdered blend. In both cases, the specific heats of the beta and alpha phases, and also of partially decomposed HMX were determined. The results show that the specific heat values for the two phases are nearly the same. Differences in the specific heat values for the single crystals, powdered and partially decomposed samples are small, and all lie within a bond of 6%. The value for the single crystals are the lowest; for the powdered blend, intermediate and for the partially decomposed; highest. In the case of the single crystals versus the powder, the values are within the combined experimental error of 3%.

(U)

(Author)

DESCRIPTORS: \*HMX, \*Specific heat, \*Scanning,

\*Calorimeters, \*Single crystals, Nitro radicals,

Differential analyzers, Decomposition, Decay,

Chemical bonds, Crystal structure

IDENTIFIERS: Differential scanning calorimeters,

Delta HMX, Beta HMX

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN35A

AD-A128 441 12/1

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

Applications of a Unified Theory of  
Monotonicity in Selection Problems.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 83 17P Berger, Roger L., Proschan,

Frank,

REPT. NO. FSU STATISTICS 8052, TR D 58-AR0

CONTRACT: F49620 82 K 0007, DAAG29 82-K-0168

PROJ: 2304

TASKS: A5

MONITOR: AFOSR,ARO TR 83-0422, 19367.3-MA

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Also available as Rept. no. TR 33-  
156 AFOSR

ABSTRACT: In this paper, the general monotonicity results concerning selection problems derived by Berger and Proschan are reviewed. They are then applied to several different formulations of the selection problem. These include comparison with a control and restricted subset selection problems. General classes of selection rules previously proposed in the literature are shown to possess the monotonicity properties. In addition, a new class of rules for the restricted subset selection formulation is proposed and shown to possess the monotonicity properties.

DESCRIPTORS: \*Population Mathematics, \*Selection, Ranking, Parametric Analysis, Value, Coordinates, Inequalities, Permutations, Mathematical Models

IDENTIFIERS: \*Monotonicity, WUAFOSR2304A5, PL61102F

(U)

(U)

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN35A

AD-A128 439 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

Central Limit Theory for Martingales via  
Random Change of Time.

(U)

DESCRIPTIVE NOTE: Technical rept.,

FEB 83 39P Rootzen, Holger;

REPT. NO. TR 28

CONTRACT: F49620-82-C-0009

PROJ: 2304

TASKS: A5

MONITOR: AFOSR TR 83-0421

UNCLASSIFIED REPORT

ABSTRACT: This paper contains an exposition of the by now rather complete central limit theory for discrete parameter martingales providing new and efficient proofs. The basic idea is to start by proving a central limit theorem under quite restrictive conditions (that the summands tend uniformly to zero and that the class of squares converge uniformly) and then to obtain the most general results by random change of time and truncation. The emphasis is on the sums of squares for squared variation process), and Burkholder's stopping to which inequality plays a crucial role in the development. In particular, this approach leads to a very short and direct proof of tightness. In the proofs we make much use of a result which is believed to be new and which binds together convergence to zero of sums and of sums of conditional expectations. In the final section, the results are extended to several dimensions, to mixing convergence, and to convergence to mixtures of normal distributions. (Author)

(U)

DESCRIPTORS: \*Stochastic processes, Theorems,

Normal distribution, Time, Parameters,

Truncation, Random variables, Convergence,

Inequalities

IDENTIFIERS: Martingales, Central limit theory,

WUAFOSR2304A5, PE61102F

(U)

(U)

AD-A128 441

UNCLASSIFIED

PAGE

144

AD-A128 439

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 434 6/15

CONNECTICUT UNIV STORRS DEPT OF BIOBEHAVIORAL SCIENCES

Acute Effects of Anticholinesterase Agents on Pupillary Function. (U)

DESCRIPTIVE NOTE: Final rept. 6 Jun 81-31 Dec 82, MAR 83 16P Giacobini, Ezio ;

CONTRACT: AFOSR 31-0229

PROJ: 2312

TASK: K1

MONITOR: AFOSR TR-83-0435

## UNCLASSIFIED REPORT

ABSTRACT: The strategy of this investigation was to correlate closely any impairment of pupillary function to parameters of cholinergic function in vitro and in vivo, following topical or systemic administration of anticholinergics. The study focused upon three aspects of cholinergic function: the synthesis and turnover of ACh, the cholinergic receptor and the release of ACh. A schematic diagram of the various steps involved in the analysis of multiple parameters of acetylcholine metabolism in a single isolated iris is reported. The characteristics of the high and low affinity Choline system which have been previously described for the developing and aging avian iris (Marchi et al., Dev. Neurosci. 3, 195, 1980 and Brain Res. 195, 423, 1980) have now been determined for the adult rat iris.

DESCRIPTORS: \*Cholinesterase inhibitors, \*Acetylcholine, \*Cholines, Pharmacokinetics, In vitro analysis, In vivo analysis, Chemoreceptors, Physiological effects, Iris, Rats, Biological absorption, Scopolamine, Metabolism  
IDENTIFIERS: WUAFOSR2312K1, PE61102F (U)  
(U)

AD-A128 434

UNCLASSIFIED

PAGE

145

AD-A128 432

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 432 20/9 20/3 12/1

NORTHEASTERN UNIV BOSTON MA

Effects of Nonconvective Electric Fields on Magnetospheric Plasma Dynamics. (U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 81-31 Jan 83, JAN 83 99P Silevitch, M. B. ;

CONTRACT: AFOSR-78-3731

PROJ: 2311

TASK: A1

MONITOR: AFOSR TR-83-0379

## UNCLASSIFIED REPORT

ABSTRACT: A study of a mechanism which can cause the disruption of a stationary electric potential structure was completed. Results were applied to the parallel electric fields which are associated with auroral arcs. A program of research directed towards analyzing the structure of small scale auroral vortices observed by an Air Force satellite was completed. Two intense auroral events marked by large deflections in the east-west magnetic field component were studied. The events are associated with electric fields whose magnitude can exceed 200 mV/m. Electric field variations give rise to plasma vortex flow patterns similar to those observed in auroral folds and curls. Observed values were consistent with collisionless, single-particle theories. (Author)

DESCRIPTORS: \*Plasmas(Physics), \*Magnetosphere, \*Electrodynamics, \*Electric fields, Vortices, Magnetic fields, Deflection, Charts, Stationary, Electric arcs, Aurorae, Vortices  
IDENTIFIERS: WUAFOSR2311A1, PE61102F (U)  
(U)  
(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 429 12/1 20/8

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

Spherical-Harmonic Expansion Techniques for  
Multicenter Integrals over STO's (Slater-  
Type Orbitals). A Re-Examination for Vector  
Processing Computers.

(U)

82 21P Michels, H. Harvey ;  
CONTRACT: F49620-81-C-0097  
PROJ: 2303  
TASK: B1  
MONITOR: AFOSR TR-83-0395

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in ETO Multicenter Molecular  
Integrals, p103-121 1982.  
Reprint: Spherical Harmonic Expansion Techniques  
For Multicenter Integrals over STO's (Slater-Type  
Orbitals). A Re-Examination for Vector Processing  
Computers.

DESCRIPTORS: Integrals, Vector analysis,  
Computers, Atomic orbitals, Processing  
Equipment, Reprints

(U)

IDENTIFIERS: Spherical harmonic expansion, Vector  
processing computers, Multicenter integrals,  
AFOSR2303B1, FEG1102F

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 428 11/9 7/4

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

Isomers of (PhMeSi)6 and (PhMeSi)5.

(U)

SEP 82 7P Chen, San-Mei ; David,  
Lawrence D. ; Haller, Kenneth J. ; Wadsworth,  
Cynthia L. ; West, Robert ;  
CONTRACT: AFOSR-82-0067, AFOSR-78-3570  
PROJ: 2303  
TASK: B2  
MONITOR: AFOSR TR-83-0397

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v2 p409-414  
1983.

Reprint: Isomers of (PhMeSi)6 and (PhMeSi)5.

DESCRIPTORS: Isomers, Polysilanes, Cyclic  
compounds, Electron spectroscopy, Electron spin  
resonance, Organometallic compounds, Reprints

(U)

IDENTIFIERS: Cyclosilanes, Electron spin resonance  
spectroscopy, WUAFOSR2303B2, FEG1102F

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 427 7/3

ROCKWELL INTERNATIONAL CANOGA PARK CA ROCKETDYNE DIV

New Syntheses of Pentafluorotellurium  
Hypochlorite, (U)APR 82 5P Schack, Carl J. ;Christe,  
Karl O. ;

CONTRACT: F49620-81-C-0020

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0411

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Fluorine  
Chemistry, v21 p393-396 1982.  
Reprint: New Syntheses of Pentafluorotellurium  
Hypochlorite.DESCRIPTORS: \*Synthesis(Chemistry), \*Fluorine,  
\*Tellurium compounds, \*Hypochlorites, Sulfates,  
Fluorides, Reprints  
IDENTIFIERS: Pentafluorotellurium hypochlorite,  
Fluorosulfate, Monofluoride, WUAFOSR2303B2,  
PE61102F

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 424 6/16 6/15

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

The Electrophysiologic Mechanisms of  
Halogenated Alkane Arrhythmogenesis. (U)DESCRIPTIVE NOTE: Final rept. 1 Jul 79-31 Aug 82,  
MAR 83 135P Strauch, S. Mark ;

CONTRACT: F49620-79-C-0185

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0436

## UNCLASSIFIED REPORT

ABSTRACT: Bromochlorodifluoromethane (1211) has  
been shown to sensitize the myocardium to the  
arrhythmogenic effects of adrenergic amines.  
Various physiologic and pharmacologic interventions  
were shown to modify both FC 1211 membrane effects  
as well as the FC 1211 sensitization process.  
These interventions included alternations in  
potassium concentration, applying stretch to  
Purkinje fibers, production of hypoxic conditions,  
alpha adrenergic effects and beta blockage of calcium  
mediated slow channel effects. In studies combining  
cyclic nucleotide measurements with  
electrophysiologic parameters, it was shown that  
isoproterenol and FC 1211 act in an additive way to  
increase cyclic adenosine monophosphate levels in  
Purkinje fibers. Effects of FC 1211 in  
conscious dogs indicated that the arrhythmogenic  
action is due to cardiac sensitization and mediated  
through beta receptors. (Author)

(U)

DESCRIPTORS: \*Halogenated hydrocarbons, \*Methanes,  
Electrophysiology, Arrhythmia, Physiological  
effects, Myocardium, Amines, Adenosine phosphates,  
Chlorine compounds, Bromine compounds, Fluorine  
compounds, Bioassay, Dogs, Dosage

(U)

IDENTIFIERS: \*Bromochlorodifluoromethane,  
Adrenergic amines, WUAFOSR2312A5, PE61102F,  
LPN-OSURF-761648/712005

(U)

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 421 11/9 20/8

CINCINNATI UNIV OH DEPT OF CHEMISTRY

Theoretical Studies of Relatively Rigid Polymer Chains.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Aug 78-31 Oct 82,  
DEC 82 89P Weish, W. J.; Bhaumik, D.;  
Nayak, K.; Mark, J. E.;  
CONTRACT: AFOSR 78 3683  
PROJ: 2303  
TASK: A3  
MONITOR: AFOSR TR-83-0431

UNCLASSIFIED REPORT

ABSTRACT: Various theoretical approaches were applied to elucidate the structure and properties of rigid rodlike polymer chains which are of interest as high performance polymeric materials. First, semi-rigid molecular mechanics methods were used to calculate the intramolecular and intermolecular energies pertinent to conformational flexibility and chain packing effects, and to characterize the conformational flexibility of various molecular swivels which could be inserted into these rodlike chains to facilitate their processing. Second, geometry optimized CNDO/2 molecular orbital calculations were carried out to investigate the structure and conformational characteristics of the rodlike polymers and of wholly aromatic swivels, in both the unprotonated and protonated states. Third, several theoretical approaches were used to calculate the molecular polarizabilities of the rodlike chains and of several analogous aliphatic and aromatic hydrocarbons. Fourth, electronic band gap calculations within the extended Huckel approximation were carried out in both the axial and perpendicular directions to elucidate the packing and electronic properties of these chains in the crystalline state. Some of these same methods were also used to investigate a variety of molecular species possessing structural features similar to those of the rodlike polymers. (Author)

(U)

DESCRIPTORS: \*Polymers, \*Molecular structure, \*Chains, \*Molecular weight, \*Azoles, Rigidity, Feasibility studies, Stacking, Polarization, Electrical conductivity, Rods, Molecular energy levels, Heterocyclic compounds, Molecule molecule IDENTIFIERS: Experimental studies, Molecular

(U)  
(U)

AD-A128 421

UNCLASSIFIED

PAGE

148

AD-A128 418

UNCLASSIFIED

EVN35A

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 418 12/1

MARYLAND UNIV COLLEGE PARK COMPUTER VISION LAB

Error-Free Parallel High-Order Convergent Iterative Matrix Inversion Based on p-ADIC Approximation.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
NOV 82 22P Krishnamurthy, E. V.;  
REPT. NO. TR-1229  
CONTRACT: AFOSR-77-3271  
PROJ: 2304  
TASK: A2  
MONITOR: AFOSR TR-83-0387

UNCLASSIFIED REPORT

ABSTRACT: The Newton-Schultz iterative scheme is reformulated in an algebraic setting to compute the exact inverse of a matrix (or the solution of a linear system of equations) over the ring of integers, with a high order or convergence, by using a finite segment p-adic representation of a rational. This method is divergence-free; it starts with the inverse of a given matrix over a finite field (called the priming field) and then iterates successively to construct, in parallel, the p-adic approximations (Hensel codes) of the rational elements of the inverse matrix. The p-adic approximation is then converted back to the equivalent rational using the extended Euclidean algorithm. The method involves only parallel matrix multiplications and complementations and has a quadratic convergence rate. Extension to achieve higher order convergence is straightforward if parallel matrix arithmetic facilities for higher precision operands (in a prime base system) are available. (Author)

(U)

DESCRIPTORS: \*Iterations, \*Matrices (Mathematics), \*Inversion, Algorithms, Computations, Approximation (Mathematics), Convergence, Linear algebraic equations, Numerical methods and procedures, Numbers

(U)

(U)

IDENTIFIERS: Newton schultz iterative scheme,

PEB1102F, WUAFOSR2304AE



## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 416 7/3

ROCKWELL INTERNATIONAL CANOGA PARK CA ROCKETDYNE DIV

Reactions of Azidotrifluoromethane with  
Halogen-Containing Oxidizers, (U)

APR 82 5P Schack, Carl J. ; Christie,

Karl O. ;

CONTRACT: F49620-81-C-0020

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-83-0413

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Inorganic Chemistry, v22  
n1 p22-25 1983.Reprint: Reactions of Azidotrifluoromethane with  
Halogen-Containing Oxidizers.DESCRIPTORS: \*Methanes, \*Chemical reactions,  
\*Halogen compounds, \*Oxidizers, Fluorine  
compounds, Sulfates, Synthesis(Chemistry),  
Chemical compounds, Chemical properties,  
ReprintsIDENTIFIERS: \*Azido trifluoromethane,  
Fluorosulfates, Peroxydisulfuryl difluoride,  
Caesium fluoride, PE61102F,  
WUAFOSR230382

(U)

(U)

AD-A128 416

UNCLASSIFIED

PAGE

149

AD-A128 414

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 414 20/4 12/1

RHODE ISLAND UNIV KINGSTON DEPT OF MATHEMATICS

Stability of Compressible Wake and Jet  
Flows. (U)DESCRIPTIVE NOTE: Final rept. 15 Feb 82-14 Feb 83,  
FEB 83 83P Verma, G. R. ; Scherr, S.

J. ; Hankey, W. L. ;

CONTRACT: AFOSR-82-0130

PROJ: 2307

TASK: A1, N4

MONITOR: AFOSR TR-83-0425

## UNCLASSIFIED REPORT

ABSTRACT: In this report the stability of  
compressible inviscid jets and wakes has been  
investigated for various wave numbers and Mach  
numbers for different velocity profiles. (Author)DESCRIPTORS: \*Compressible flow, \*Jet flow, \*Wake,  
\*Equations, Stability, Inviscid flow, Two  
Eigenvalues, Frequency, Mach number, Two  
dimensional flow, Velocity, Profiles,  
Perturbations, Computations, Tables(Data),  
Asymmetry, Symmetry

IDENTIFIERS: PE61102F, WUAFOSR2307A1,

WUAFOSR2307N436

(U)

(U)

(U)

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 396 8/11 18/3

SAINT LOUIS UNIV MO DEPT OF EARTH AND ATMOSPHERIC SCIENCES

Attenuation of Seismic Waves at Regional Distances. (U)

DESCRIPTIVE NOTE: Final technical rept. 1 Oct 78-30 Sep 82.

FEB 83 78P Mitchell, Brian J.; Nuttli,

OTTO W.; CONTRACT: F49620-79-C-0025, ARPA Order-3291

PROJ: 2309

TASK: A1

MONITOR: AFOSR TR-83-0427

## UNCLASSIFIED REPORT

ABSTRACT: This final report deals in part with the use of regional seismic crustal phases, particularly Lg, to discriminate between explosions and earthquakes, to determine mb values of explosions and earthquakes, and to estimate yields at regional distances. An Lg-yield calibration relation is developed for MFS events, and then used to estimate the yields of selected explosions at the Fat Knuck test sites in the USSR. The report is further concerned with the attenuation of seismic surface waves at intermediate periods and how the attenuation of those waves is related to that of higher frequency crustal phases. Significant regional variations of upper crustal Q values are found and higher frequency wave propagation more efficiently than expected on the basis of intermediate period waves.

DESCRIPTORS: Seismic waves, Periodic variations, Attenuation, Nuclear explosion detection, Rock, Earth crust, USSR, Primary waves (Seismic waves), Waveforms

IDENTIFIERS: PB82714E, UNAFOSR2309A1

(U)

(U)

(U)

AD-A128 396

UNCLASSIFIED

PAGE

150

AD-A128 386

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 386 21/5 20/1 20/4

TENNESSEE UNIV SPACE INST TULLAHOMA DEPT OF AEROSPACE AND MECHANICAL ENGINEERING

Unsteady Swirling Flows in Gas Turbines. (U)

DESCRIPTIVE NOTE: Final technical rept. 1 Apr 78-31 Dec 82.

MAR 83 16P Kurosaka, M.;

CONTRACT: F49620-78-C-0045

PROJ: 2307

TASK: A4

MONITOR: AFOSR TR-83-0426

## UNCLASSIFIED REPORT

ABSTRACT: The overall objective was to acquire fundamental understanding of phenomena characterized by violent fluctuation induced by swirling flow - the 'vortex whistle', often found to occur in various aircraft engine components. By conducting a comprehensive and systematic investigation into the 'vortex whistle', it was intended to achieve the following specific goals: (1) by performing analysis to predict the frequency of the vortex whistle and verifying it against the experimental results, one can define the natural frequencies of engine components away from it in order to ensure their structural integrity, and (2) by appealing to the mechanism of acoustic streaming induced by the vortex whistle, we explained, through both analysis and experiment, the transformation of steady radial profile - in particular the total temperature separation or the Ranque-Hilsch tube effect; the implications of this are that the radial distortion of the flow field may have strong bearing on the 'steady' aero data obtained in the swirling flow environment of gas turbines. (Author)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 384 20/8 20/5

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

Rotational Relaxation Studies of Hydrogen Fluoride.

(U)

DESCRIPTIVE NOTE: Final rept.,

H. ; NOV 82 33P Hinchey, J. J. ; Hobbs, R.

REPT. NO. UTRC/R82-955423

CONTRACT: F49620-81-C-0011

PROJ: 2303

TASK: B1

MONITOR: AFOSR TR-83-0432

## UNCLASSIFIED REPORT

**ABSTRACT:** Laser double resonance experiments in HF were extended to probing levels as high as  $J=13$  to define the processes of population transfer between rotational levels and transfer from vibration to rotation. In the first part of this report rotational transfer experiments are described and the results are compared with three different kinetic models. Using the criteria of transfer rates and signal shapes for evaluation, the Polyani-Woodall model was found to best describe the data. The second part of the report describes observations of direct transfer of vibrational ( $V=1$ ) transfer to rotational levels  $J=10-13$  of  $V=0$ . Very fast transfer by this route was measured but only a small fraction of the  $V=1$  population was involved. Dilution of the HF sample by rare gases was found to enhance V-R transfer in accord with observations reported for rotational HF lasers.

(U)

**DESCRIPTORS:** \*Molecular rotation, \*Chemical lasers, \*Relaxation, \*Hydrogen fluoride lasers, Spin resonance, Molecular vibration, Energy transfer, Molecular energy levels, Kinetic theory, Models, Standards

(U)

**IDENTIFIERS:** Rotational transfer experiments, Rotational population transfer, Polani woodall model, Rotational levels, WUAFOSR230381, PE61102F

(U)

AD-A128 384

UNCLASSIFIED

PAGE

151

AD-A128 378

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 378 6/13

OHIO STATE UNIV COLUMBUS DEPT OF MICROBIOLOGY

Development and Use of Anucleate Bacterial Cells to Assay the In vitro Activity of Pollutants.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 1 Apr 81-31 Jul 82.

DEC 82 25P Reeve, John N. ;

CONTRACT: AFOSR-81-0087

PROJ: 2312

TASK: A5

MONITOR: AFOSR TR-83-0442

## UNCLASSIFIED REPORT

**ABSTRACT:** The T7 0.3 gene product (0.3 protein) was purified by a modification of the published procedure (2), and used to raise antibody to this protein. A radioimmune precipitation (RIP) assay was developed which could be used to estimate the increased misincorporation of cysteine into 0.3 protein. Parameters of the RIP assay were varied to make the RIP-polyacrylamide gel electrophoresis (RIP-PAGE) assay specific for the 0.3 protein. A single protein band was, however, never achieved although increased misincorporation of cysteine into the 0.3 protein can now be estimated by RIP-PAGE combined with scanning densitometry.

(U)

**DESCRIPTORS:** \*Bacteria, \*Bioassay, \*Radioimmunoassay, \*Pollutants, In vitro analysis, Proteins, Cysteine

(U)

(U)

IDENTIFIERS: PE61102F, WUAFOSR2312A5

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 376 8/11 9/2

RONDOUT ASSOCIATES INC STONE RIDGE NY

The Use of Regional Seismic Waves for  
Discrimination and Yield Determination.  
Volume II.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 79-31 Dec 82,  
JAN 83 124P Pomeroy, Paul W. ; Sutton,  
George H. ; Carter, Jerry A. ;  
REPT. NO. RAI-FTR-04-83-01-VOL-2  
CONTRACT: F49620-80-C-0021, ARPA Order-3291  
MONITOR: AFOSR TR-82-0434

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A128  
375.

ABSTRACT: This report, which is presented in two  
volumes as follows: Volume II entitled 'The  
Use of Regional Seismic Waves for  
Discrimination and Yield Determination' deals  
with the following topics: (a) Discrimination  
techniques at Regional Distances, (b) Yield  
Determination Using Regional Seismic Waves,  
(c) The Catekill Seismic Array (CSA), (d)  
The Nevada Test Site Explosion HARZER  
Recorded at CSA, (e) Explosion P Waves  
Recorded at CSA and the Wake Island  
Hydrophone Array (WHA), (f) Q of the  
Northwest Pacific Lithosphere, and (g) The  
Instrumental Upgrade of WHA to Digital  
Recording.

(U)

DESCRIPTORS: \*Seismic data, \*Seismological stations,  
Remote terminals, Seismic waves, Discrimination,  
Earthquake warning systems, Microcomputers, Yield,  
Lithosphere, Primary waves (Seismic waves), User  
needs, Seismic arrays

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 375 8/11 9/2

RONDOUT ASSOCIATES INC STONE RIDGE NY

Enhance and Test the Remote Seismic  
Terminal. Volume I.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 79-31 Dec 82,  
JAN 83 92P Pomeroy, Paul W. ; Sutton,  
George H. ; Carter, Jerry A. ;  
REPT. NO. RAI-FTR-04-83-01-VOL-1  
CONTRACT: F49620-80-C-0021, ARPA Order-3291  
MONITOR: AFOSR TR-83-0433

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A128  
376.

ABSTRACT: This report, which is presented in two  
volumes as follows: Volume I entitled Enhance  
and Test the Remote Seismic Terminal  
describes the terminal system and, in greater detail,  
the Seismic Recording System add-on to the  
terminal.

(U)

DESCRIPTORS: \*Seismic data, \*Seismological stations,  
Remote terminals, Seismic waves, Discrimination,  
Microcomputers, Primary waves (Seismic waves),  
Earthquake warning systems, User needs, Computer  
program documentation, Seismic arrays  
IDENTIFIERS: PEB1101E

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 372 7/2 20/5

CLARKSON COLL OF TECHNOLOGY POTSDAM NY

Study of the Chlorine-Basic Hydrogen Peroxide Reaction.

(U)

DESCRIPTIVE NOTE: Final rept.,

82 30P

CONTRACT: AFOSR-81-0155

PROJ: 2303

TASK: D9

MONITOR: AFOSR TR-83-0430

UNCLASSIFIED REPORT

ABSTRACT: The reaction of chlorine with alkaline hydrogen peroxide solutions, approximately 2.5M in  $O_2H^-$ , has been examined in an unagitated batch reactor at 10 degrees C. Initial chlorine partial pressures of up to 450 torr and reaction times of one, three and six minutes were investigated. The results are in qualitative agreement with the theory for absorption with an instantaneous reaction, in which the rate of reaction becomes controlled by liquid phase mass transfer after an initial, rapid reaction depletes the interfacial region of  $O_2H^-$  reactant. The effective anion diffusivity was on the order of  $7 \times 10^{-4}$  sq. cm per sec, a value much larger than typical liquid diffusivities. The rate of reaction declined faster than the time  $(-1/2)$  dependence predicted by the theory for absorption with an instantaneous reaction. In one minute's time, complete conversion of all added chlorine to chloride ion was achieved until  $4.7 \times 10^{-4}$  moles of chlorine per sq. cm of interfacial area have reacted. Subsequent reaction was almost independent of initial chlorine partial pressure. The amount of chlorine reaction was not sensitive to the rate of oxygen produced by hydrogen peroxide disproportionation. The rate of disproportionation was seen to depend in a complicated manner on the composition of the alkaline solutions.

DESCRIPTORS: \*Chlorine, \*Hydrogen peroxide, \*Chemical reactions, \*Chemical lasers, Alkalinity, Reaction time, Partial pressure, Liquid phases, Mass transfer, Anions, Diffusivity, Conversion, Ionization, Chlorides, Rates

IDENTIFIERS: PEG1102F, WUAFOSR230309

(U)

(U)

(U)

AD-A128 372

UNCLASSIFIED

PAGE

153

AD-A128 359

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 359 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PRECESSES

Limit Laws for the Maximum of Weighted and Shifted I.I.D. Random Variables.

(U)

DESCRIPTIVE NOTE: Technical rept.,

FEB 83 34P

DALEY, D. J.; Hall, Peter;

REPT. NO. TR-28

CONTRACT: F49620-82-C-0009

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0415

UNCLASSIFIED REPORT

DESCRIPTORS: \*Random variables,  
 \*Sequences(Mathematics), \*Distribution functions,  
 \*Weighting functions, Stochastic processes,  
 Limitations, Theorems

IDENTIFIERS: PEG1102F, WUAFOSR2304A5

(U)

(U)

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 160 11/9 20/3

CINCINNATI UNIV OH

Configurational Characteristics of the  
Polysulfides. 2. Dipole Moments and Gauche  
Effects in Poly (1,3-dithiocane).

(U)

AUG 81 10P Welsh, W. J. ; Mark, J. E.  
; Guzman, J. ; Riande, E. ;  
CONTRACT: AFOSR-78-3683  
PROJ: 2303  
TASK: A3  
MONITOR: AFOSR TR-83-0363

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Makromolekulare Chemie,  
V183 p2573-2581 1982. See also AD-A128 159.  
Reprint: Configurational Characteristics of the  
Polysulfides. 2. Dipole Moments and Gauche Effects  
in Poly (1,3 dithiocane).

DESCRIPTORS: Polysulfides, Dipole moments,  
Thiols, Sulfur, Alkyl radicals, Oxides,  
Molecular structure, Configurations, Reprints  
(U)  
(U)  
IDENTIFIERS: Gauche effects, Polymethiocane,  
Polyalkylene oxides, AFOSR2303A3, PE61102F

AD-A128 160

UNCLASSIFIED

PAGE

154

AD-A128 159

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 159 11/9 20/3

CINCINNATI UNIV OH

Configurational Characteristics of the  
Polysulfides. 3. Dipole Moments of  
Poly(trimethylene sulfide) and Comparisons  
between some Polysulfides and the Corresponding  
Polyoxides.

(U)

AUG 81 11P Buzman, J. ; Riande, E. ;  
Welsh, W. J. ; Mark, J. E. ;  
CONTRACT: AFOSR-78-3683  
PROJ: 2303  
TASK: A3  
MONITOR: AFOSR TR-83-0356

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Makromolekulare Chemie,  
V183 p2573-2581 1982. See also AD-A127 914.  
Reprint: Configurational Characteristics of the  
Polysulfides. 3. Dipole Moments of Poly(trimethylene  
sulfide) and Comparisons between some Polysulfides and  
the Corresponding Polyoxides.

DESCRIPTORS: Polysulfides, Dipole moments,  
Thiols, Methyl radicals, Comparison, Alkyl  
radicals, Oxides, Molecular structure,  
Configurations, Reprints  
(U)  
(U)  
IDENTIFIERS: Polyoxides, Polytrimethylene sulfide,  
WUAFOSR2303A3, PE61102F

## UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 156 12/1

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL  
ENGINEERINGInstability of a Half-Space with Frictional  
Materials.

JUL 81 18P Horii, H.; Nemat-Nasser, S.

CONTRACT: AFOSR-80-0017

PROJ: 2307

TASK: C1

MONITOR: AFOSR TR-83-0348

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Applied  
Mathematics and Physics (ZAMP), v33 p1-16 Jan  
82.Reprint: Instability of a Half-Space with  
Frictional Materials.DESCRIPTORS: \*Plastic deformation, \*Equations,  
Determinants, Stability, Computations, Friction,  
Materials, ReprintsIDENTIFIERS: Frictional materials,  
WUAFOSR2307C1, PE61102F

(U)

(U)

AD-A128 156

UNCLASSIFIED

PAGE

155

AD-A128 099

UNCLASSIFIED

EVN35A

## UNCLASSIFIED

UTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN35A

AD-A128 099 12/1

ILLINOIS UNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS

Pairwise Orthogonal F-Rectangle  
Designs.

(U)

DESCRIPTIVE NOTE: Technical rept..

DEC 82 16P Federer, W. T.; Hedayat, A.

S.; Mendell, J. P.;

CONTRACT: AFOSR-80-0170

PROJ: 2304

TASK: A5

MONITOR: AFOSR TR-83-0332

UNCLASSIFIED REPORT

ABSTRACT: The concept of pairwise orthogonal Latin square designs is applied to a row by column experiment designs which are called pairwise orthogonal F-rectangle designs. These designs are useful in designing successive and/or simultaneous experiments on the same set of experimental units, in constructing codes, and in constructing orthogonal arrays. A pair of orthogonal F-rectangle designs exists for any set of  $v$  treatments (symbols), whereas no pair of orthogonal Latin square designs of orders two and six exists, and one of the two construction methods presented does not rely on any previous knowledge about the existence of a pair of orthogonal Latin square designs, whereas the second one does. It is shown how to extend the methods to  $r = pv$  row by  $c = qv$  column designs and how to obtain a pairwise orthogonal F-rectangle designs. When the maximum possible number of pairwise orthogonal F-rectangle designs is attained the set is said to be complete. Complete sets are obtained for all  $v$  for which  $v$  is a prime power. The construction method makes use of the existence of a complete set of pairwise orthogonal Latin square designs and of an orthogonal array with  $v$  sub  $n$  columns, ( $v$  sub  $n - 1$ )/( $v - 1$ ) rows,  $v$  symbols, and of strength two.

(Author)

DESCRIPTORS: \*Experimental design, \*Set theory,

\*Orthogonality, Arrays, Coding, Construction,

Methodology, Theorems

IDENTIFIERS: F rectangle designs, PE61102F.

WUAFOSR2304A5

(U)

(U)

(U)

END

FILMED

1-90

DTIC



